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THE NATURAL ARITHMETIC

BOOK I

BY

ISAAC O. WINSLOW, M.A.

PRINCIPAL OF THAYER STREET GRAMMAR SCHOOL
PROVIDENCE, R.I.

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PURPOSES AND DISTINCTIVE FEATURES

THE purposes of this series of Arithmetics are: —

1. *To present the subjects in a spiral order.*

Instead of presenting the general subjects of addition, subtraction, multiplication, division, fractions, etc., as complete wholes in regular succession, each subject is divided into parts with reference to the difficulty of the principles involved. The easier principles of various subjects are treated together, while the more difficult principles are reserved until the child has gained the power to apprehend them easily.

2. *To make the work easy.*

In the belief that it is better to keep mathematical work a little behind the child's mental grasp than to advance it beyond that limit, the work designed for the different grades has been made somewhat easier than that usually found in text-books. The pupil is kept busy with a varied application of the principles that he has already mastered instead of being too rapidly crowded forward into greater difficulties.

3. *To give the subject variety and interest.*

The problems are based upon facts and principles gathered from the different branches of study, as history, geography, nature study, astronomy, and physics, as well as on the customary commercial transactions, thus correlating arithmetic with other studies and adding distinctly to its vividness and interest.

464014

4. *To develop genuine mathematical thought.*

There is a large amount of mental work interspersed with the written work. Each new subject is first developed with numbers that are not too large for mental solution. After the principle has been well established, written practice with larger numbers is introduced. Originality is also promoted by exercises requiring the pupils to make problems for themselves from given data.

5. *To give prominence to the idea of magnitude.*

The psychological fact that all mathematical knowledge is a system of relations, or ratios, has been recognized throughout the series. For the purpose of suggesting to the pupils the application of number to magnitude, the simple geometric forms have been gradually introduced.

In BOOK I simple work in the fundamental operations and in compound quantities, or denominate numbers, is introduced inductively. Easy examples involving fractional parts of integers are inserted, toward the end of the book, as a preparation for the more systematic work in fractions which is to follow.

The steps of progress through the book are marked by a gradual increase in the size of the numbers, and within these enlarging limits there is a thorough drill in all the processes and combinations that have been introduced.

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Grades 1 & 2

BOOK I

Addition and Subtraction

Do not add by counting. In adding four and three, think of the answer, and say "seven." In taking two from seven, say "five."

a. Three pins and two pins are — pins.
b. Four pins and three pins are — pins.
c. Five pins and two pins are — pins.
d. Seven pins less two pins are — pins.

e. Three blocks and three blocks are — blocks.
f. Five blocks and three blocks are — blocks.
g. Six blocks and two blocks are — blocks.
h. Eight blocks less three blocks are — blocks.

i. Three balls and three balls are — balls.
j. Six balls and three balls are — balls.
k. Six balls and one ball are — balls.
l. Nine balls less three balls are — balls.

Fill the blank spaces with proper words, or write the letter for each statement and after it the word to be inserted:

a. George had four pears and Harold gave him three more. He then had — pears.

b. George had seven pears and gave his sister two of them. He had — pears left.

c. Helen had four blocks in one pile and three in another pile. She put the two piles together and then had — blocks in one pile.

d. Henry had eight cents and lost three of them. He then had — cents.

e. He had three cents and his brother gave him two more. He then had — cents.

f. Edgar is five years old and his sister is three years older. How old is his sister?

g. If Edgar is five years old, how old will he be in four years?

h. A little girl is eight years old. How old was she three years ago?

i. Jennie had six cherries and her mother gave her three more. How many had she then?

j. She had nine cherries and ate three of them. How many had she left?

k. Jennie is five years old and her sister is four years old. How much older is she than her sister?

l. Robert had three books and his father gave him four more. How many had he then?

Addition and Subtraction

Do not add or subtract by counting forwards or backwards. First give the results orally, then copy the figures and write the results. Say, "four and two are" and "four less two are."

a.	*b.*	*c.*
$4 + 2 =$	$4 - 2 =$	$6 + 2 =$
$4 + 4 =$	$5 - 2 =$	$6 - 4 =$
$5 + 3 =$	$5 - 4 =$	$6 - 1 =$
$3 + 4 =$	$6 - 3 =$	$6 + 3 =$
$5 + 4 =$	$6 - 2 =$	$6 - 5 =$

d.	*e.*	*f.*
$7 + 2 =$	$5 + 4 =$	$2 + 7 =$
$7 - 2 =$	$5 - 3 =$	$7 - 2 =$
$7 - 4 =$	$8 - 4 =$	$9 - 2 =$
$8 + 1 =$	$7 - 3 =$	$9 - 5 =$
$8 - 2 =$	$7 - 5 =$	$9 - 7 =$

Add:

g.	3	3	2	4	4	2	4
	3	4	4	4	5	3	3
h.	3	5	7	6	3	5	2
	5	2	2	2	6	4	7

Subtract:

i.	4	5	6	5	6	6	7
	2	2	3	3	4	2	2
j.	7	8	8	9	9	7	9
	3	4	2	3	4	4	6

a. How many cows are 4 cows and 3 cows?

b. How many cows are 5 cows, 3 cows, and 1 cow?

c. How many cows are 7 cows less 2 cows?

d. How many flags are 2 flags and 6 flags?

e. How many flags are 3 flags, 2 flags, and 2 flags?

f. How many flags are 9 flags less 3 flags?

g. Four eggs, two eggs, and one egg are — eggs.

h. Three eggs, three eggs, and two eggs are — eggs.

i. Eight eggs less four eggs are — eggs.

j. Seven eggs less three eggs are — eggs.

k. Two boys, 2 boys, and 4 boys are — boys.

l. Nine boys less four boys are — boys.

m. How many birds are 4 birds, 4 birds, and 1 bird?

n. How many birds are 6 birds, 2 birds, and 1 bird?

o. How many roses are 4 roses, 2 roses, and 2 roses?

p. How many roses are 3 roses, 3 roses, and 3 roses?

q. Five stars, three stars, and one star are — stars.

r. Four stars, three stars, and two stars are — stars.

s. Seven trees, one tree, and one tree are — trees.

t. Five trees, one tree, and three trees are — trees.

u. Five buds, 2 buds, and 2 buds are —.

v. Eight cars less 5 cars less 2 cars are —.

w. Seven bells less 2 bells less 3 bells are —.

x. Nine tents less 4 tents less 1 tent are —.

y. Eight swans less 2 swans less 3 swans are —.

Follow the directions given on pages 7, 8, and 9.

a. Minnie had 6 blocks and placed them in three equal piles. She had — in each pile.

b. She placed them in two equal piles and then had — in each pile.

c. Herbert had 8 firecrackers. He placed them in two equal piles. He had — in each pile.

d. He placed them so as to have two firecrackers in each pile. He then had — piles.

e. Charlotte had 9 buttons. She had three in each pile. How many piles had she?

f. 2 and 2 and 2 are —. How many are three 2's?

g. 3 and 3 are —. How many are two 3's?

h. 4 and 4 are —. How many are two 4's?

i. 3 and 3 and 3 are —. How many are three 3's?

j. 2 and 2 and 2 and 2 are —. How many are four 2's?

k. How many 2's are there in 6?

l. How many 3's are there in 6?

m. How many 4's are there in 8?

n. How many 3's are there in 9?

o. How many 2's are there in 8?

Problems

Do not try to give long explanations. "One orange costs 2 cents. Four oranges cost 8 cents."

a. How much will 4 stamps cost at 2 cents each?

b. How many stamps at 2 cents each can I buy for 6 cents?

c. How many shoes are there in 4 pair of shoes?

d. There are 6 books for 3 girls. How many books can each girl have?

e. If there were only two girls, how many books could each girl have?

f. Three boys are to have 9 tennis balls. How many balls will each boy have?

g. William can read 8 pages in 4 minutes. How many can he read in one minute?

h. A boy sold papers for 2 cents each. He sold 4 papers. How many cents did he receive?

i. It takes 2 cents to buy a paper. How many papers can I buy for 6 cents?

j. We eat 3 times a day. How many times do we eat in 3 days?

k. How many cents must I put with 5 cents to make 8 cents?

l. How many cents must I put with 6 cents to make 10 cents?

m. How many cents must I put with 3 cents to make 8 cents?

n. How many more are 9 eggs than 7 eggs?

o. How many more are 7 eggs than 2 eggs?

p. How many less are 3 eggs than 7 eggs?

q. How many less are 2 eggs than 8 eggs?

Follow the directions given on pages 7 and 8.

a. 4 blocks and 4 blocks are — blocks.
b. 8 blocks and 1 block are — blocks.
c. 8 blocks and 2 blocks are — blocks.
d. 9 blocks and 1 block are — blocks.
e. 6 blocks and 3 blocks are — blocks.
f. 6 blocks and 4 blocks are — blocks.

g. 5 balls and 5 balls are — balls.
h. 6 balls and 4 balls are — balls.
i. 7 balls and 2 balls are — balls.
j. 2 balls and 8 balls are — balls.
k. 4 balls and 2 balls are — balls.
l. 4 balls and 6 balls are — balls.

m. 9 children less 3 children are — children.
n. 10 children less 3 children are — children.
o. 10 children less 5 children are — children.
p. 8 children less 4 children are — children.
q. 10 children less 4 children are — children.
r. 10 children less 6 children are — children.

s. 2 cents, 3 cents, and 3 cents are — cents.
t. 4 cents, 3 cents, and 3 cents are — cents.
u. 5 cents, 3 cents, and 2 cents are — cents.
v. 6 cents, 2 cents, and 2 cents are — cents.
w. 5 cents, 2 cents, and 1 cent are — cents.
x. 10 cents less 5 cents less 2 cents are — cents.

Addition and Subtraction

First begin at the bottom of each column and add upwards. In the first example in addition say "six, eight." Then begin at the top and add downwards. Say "seven, eight." In the first example in subtraction say "three from seven leaves four."

Add:

a.	2	3	2	2	3	4	3
	5	1	1	4	5	0	3
	1	4	3	2	0	5	3
b.	2	3	4	7	4	3	2
	1	4	0	0	2	5	2
	4	1	2	2	3	1	5
c.	5	4	3	3	6	4	2
	2	0	4	5	1	4	4
	3	5	3	0	3	1	4
d.	2	4	5	8	4	1	4
	2	0	1	0	3	4	5
	6	4	3	2	2	3	0

Subtract:

e.	7	9	10	10	8	8	10
	3	2	5	8	2	5	2
f.	9	9	8	8	3	10	10
	1	0	3	1	0	9	1
g.	6	6	6	10	10	9	8
	6	0	3	0	7	6	4

Review

a. How many are six and three?

b. How many are six less three?

c. How many are eight less two?

d. How many are five and four?

e. How many are nine less five?

f. Three and three and four are —.

g. Four and four and one are —.

h. Four and four less two are —.

i. Five and three less one are —.

j. Seven and three less two are —.

k. Three and three and three are —.

l. In 6 there are — 2's.

m. In 4 there are — 2's.

n. In 6 there are — 3's.

o. In 8 there are — 4's.

p. In 8 there are — 2's.

q. In 9 there are — 3's.

r. Two 2's and 1 make —.

s. Two 3's and 2 make —.

t. Three 2's and 1 make —.

u. Two 4's and 2 make —.

v. Two 2's less 1 are —.

w. Two 3's less 2 are —.

Problems

Do not try to give explanations. Think what words belong in the blank spaces and give them either orally or in writing.

a. If 7 birds were on a tree and 3 flew away, there were — birds left.

b. If 5 of the 7 birds flew away, there were — birds left?

c. I went to the store and bought a five cent loaf of bread. I gave the man ten cents, and he gave me back — cents.

d. My mother sent me to the store to buy a quart of milk for 5 cents and a cake of yeast for 2 cents. She gave me ten cents. I brought back to her — cents.

e. Albert bought two newspapers for two cents each and one for three cents. He paid — cents for them all.

f. Two things make a pair. Three pair of shoes are — shoes.

g. Four pair of gloves are — gloves.

h. Eight gloves are — pair of gloves.

i. A hen had ten chickens, but three chickens died. There were — chickens left.

j. I bought some stamps for ten cents. There were three two-cent stamps and — one-cent stamps.

k. Six days less two days are — days.

l. There are seven days in a week. Three days of the week are gone. There are — days left.

m. The vacation is to last nine days. Four days are gone. There are — days left.

Eleven–Twelve

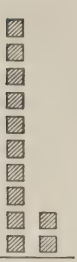
11

Ten and one are eleven.

Ten and two are twelve.

$10 + 1 = 11$ $\quad$ $\begin{array}{r} 10 \\ 1 \\ \hline 11 \end{array}$

$10 + 2 = 12$ $\quad$ $\begin{array}{r} 10 \\ 2 \\ \hline 12 \end{array}$



12

10 ones make ten. The 1 ten is written in the second place from the right.

a. Ten acorns and one acorn are — acorns.

b. Five acorns, five acorns, and one acorn are — acorns.

c. Five acorns and — acorns are eleven acorns.

d. Three acorns and — acorns are eleven acorns.

e. Eleven less three are —.

f. Eleven less — are seven.

g. Eight and — are eleven.

h. Eleven less — are five.

i. Two and — are eleven.

j. Ten eggs and two eggs are — eggs.

k. Eight eggs and four eggs are — eggs.

l. Twelve eggs less — eggs are six eggs.

m. Six and six are —.

n. Twelve less four are —.

o. Twelve less — are eight.

Addition and Subtraction

Practice upon this page repeatedly until the answers can be given rapidly, at sight. Do not take time to read the examples; simply give the answers in order. For an exercise with the pencil, copy the work together with the answers.

a.	*b.*	*c.*
7 + 3 = ?	6 + 3 = ?	7 − 3 = ?
6 + 4 = ?	7 + 3 = ?	8 − 4 = ?
5 + 5 = ?	4 + 4 = ?	9 − 6 = ?
5 + 3 = ?	3 + 3 = ?	6 − 3 = ?
4 + 5 = ?	3 + 5 = ?	9 − 7 = ?

d.	*e.*	*f.*
9 + 1 = ?	1 + 10 = ?	10 − 1 = ?
7 + 2 = ?	8 + 3 = ?	10 − 5 = ?
2 + 9 = ?	4 + 5 = ?	11 − 5 = ?
6 + 5 = ?	8 + 0 = ?	11 − 6 = ?
8 + 2 = ?	10 + 1 = ?	11 − 8 = ?

g.	*h.*	*i.*
10 + 2 = ?	8 + 3 = ?	9 + 3 = ?
8 + 4 = ?	3 + 8 = ?	3 + 9 = ?
6 + 6 = ?	11 − 3 = ?	12 − 3 = ?
12 − 4 = ?	11 − 8 = ?	12 − 9 = ?
12 − 8 = ?	11 − 6 = ?	6 + 6 = ?

j.	*k.*	*l.*
4 + 8 = ?	11 − 4 = ?	12 − 11 = ?
2 + 8 = ?	7 + 4 = ?	9 + 3 = ?
2 + 10 = ?	12 − 2 = ?	11 − 9 = ?
3 + 7 = ?	10 + 2 = ?	2 + 9 = ?
9 − 4 = ?	12 − 9 = ?	12 − 10 = ?

First study the picture. Notice how many groups there are in each line and how many in each group.

a. How many 5's are there in 10?
b. How many 2's are there in 10?
c. How many 2's are there in 12?
d. How many 3's are there in 12?
e. How many 6's are there in 12?
f. How many 2's are there in 6?
g. How many 3's are there in 6?
h. How many 3's are there in 9?
i. How many 4's are there in 8?
j. How many 2's are there in 8?
k. 2 and 2 are —.
l. 2 and 2 and 2 are —.
m. 2 is contained in 6 — times.
n. 3 and 3 are —.
o. 3 is contained in 6 — times.
p. 3 and 3 and 3 are —.
q. 3 is contained in 9 — times.
r. 2 and 2 and 2 and 2 are —.
s. 4 times 2 are —.
t. 2 is contained in 8 — times.
u. 4 times — are 12.

Problems

Read the directions on page 8.

a. Ernest has 3 pockets and has 3 cents in each pocket. In all he has — cents.

b. A lady divided 8 pictures equally among 4 children. Each child received — pictures.

c. At 3 cents each, 3 car rides will cost — cents.

d. If 4 glasses cost 8 cents, 1 glass will cost — cents.

e. If 6 sponges cost 12 cents, 1 sponge will cost — cents.

f. If milk costs 5 cents a quart, I can buy — quarts for 10 cents.

g. If 12 pens cost 12 cents, I can buy — pens for 1 cent.

h. In all my pockets I have 12 cents. I have 3 cents in each pocket. I have — pockets.

i. There are 6 chairs in the sitting room and 6 more in the parlor. In both rooms there are — chairs.

j. A teacher has 10 picture cards to give to 5 children. She can give each child — cards.

k. Frank has 12 blocks in 4 piles. In one pile there are — blocks.

l. If Alice can read 5 pages of a book in 10 minutes, she can read 1 page in — minutes.

m. A butterfly has 4 wings. Three butterflies have — wings.

n. Bees make their cells for honey with 6 sides. Two cells have — sides.

Multiplication and Division

2×2 may be read "2 times 2," or "2 multiplied by 2."

"$8 \div 2 = ?$" asks the question how many 2's there are in 8. In the question "$8 \div 2 = ?$" say either "8 divided by 2 equal 4," or "2 is contained in 8 four times." Read the note on page 18.

a.

$2 + 2 = ?$
$2 + 2 + 2 = ?$
$3 + 3 = ?$
$3 + 3 + 3 = ?$
$2 + 2 + 2 + 2 = ?$

b.

$4 + 4 = ?$
$5 + 5 = ?$
$3 + 3 + 3 + 3 = ?$
$4 + 4 + 4 = ?$
$2 + 2 + 2 + 2 + 2 = ?$

c.

$2 \times 2 = ?$
$3 \times 2 = ?$
$2 \times 3 = ?$
$3 \times 3 = ?$
$4 \times 2 = ?$

d.

$4 \times 3 = ?$
$2 \times 4 = ?$
$3 \times 4 = ?$
$2 \times 5 = ?$
$5 \times 2 = ?$

e.

$2 \times 6 = ?$
$6 \times 2 = ?$
$3 \times 4 = ?$
$2 \times 5 = ?$
$4 \times 2 = ?$

f.

$2 \div 2 = ?$
$4 \div 2 = ?$
$6 \div 3 = ?$
$4 \div 4 = ?$
$6 \div 2 = ?$

g.

$8 \div 4 = ?$
$8 \div 2 = ?$
$9 \div 3 = ?$
$10 \div 5 = ?$
$10 \div 2 = ?$

h.

$12 \div 6 = ?$
$12 \div 3 = ?$
$12 \div 4 = ?$
$12 \div 2 = ?$
$8 \div 2 = ?$

Multiply:

i.	3	4	5	2	3
	2	3	2	4	3
j.	2	3	2	4	2
	3	4	5	2	6

Divide:

k. $2\overline{)6}$ $3\overline{)9}$ $4\overline{)8}$ $2\overline{)10}$ $3\overline{)12}$

(page 21)

Problems

Read the directions on page 8.

a. There are 5 blocks in a row. There are 2 rows of blocks. In all there are — blocks.

b. There are 3 rows of spools. There are 3 spools in each row. In all there are — spools.

c. There are 6 cakes for 3 little girls. Each girl can have — cakes.

d. On some pine trees there are 5 needles in a bundle. In 2 bundles there are — needles.

e. There are 9 figs for 3 boys. Each boy can have — figs.

f. There are 4 cents in each pile. There are 3 piles. In all there are — cents.

g. Mr. Hall gave his two little boys 5 cents each. He gave them — cents.

h. A boy sold papers to 5 men. Each man bought 2 papers. He sold — papers in all.

i. A quart of milk costs 6 cents. Two quarts of milk cost — cents.

j. A ball of cord costs 2 cents. For 8 cents I can buy — balls of cord.

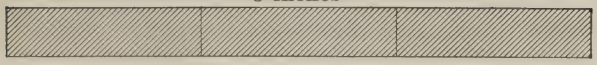
k. Two buttons cost a cent. For 5 cents I can buy — buttons.

l. Two envelopes cost 3 cents. Four envelopes will cost — cents.

m. Three marbles cost 1 cent. Nine marbles cost — cents.

n. Two shoes are called a pair of shoes. Six pair of shoes are — shoes.

Inches



Examine a foot rule. Measure a foot on paper and mark the inches. Divide a foot in the middle and see how many inches there are on each side. Divide each of the two parts in the middle and see how many inches there are in each of the four divisions. Divide the twelve inches into equal groups in as many ways as you can.

There are 12 inches in a foot.

a. How many sticks 6 inches long must be put together to make a foot?

b. How many sticks 4 inches long must be put together to make a foot?

c. If I divide a foot into 4 equal parts, how many inches will there be in each part?

d. If I divide a foot into 6 equal parts, how many inches will there be in each part?

e. If I should cut 3 inches from a stick that is a foot long, how many inches would there be left?

f. If I should cut 7 inches from a string that is a foot long, how many inches would there be left?

g. How many inches must be put with 6 inches to make a foot?

h. How many inches must be put with 9 inches to make a foot?

i. Mary's pencil was 7 inches long. It is now 4 inches long. How many inches of the pencil has she used?

j. John has a card which is 3 inches long and 2 inches wide. How many inches is it all the way around the card?

a. There are 7 days in a week. How many days are left when Sunday and Monday are past?

b. How many days are left when 4 days have passed?

c. A boy had ten cents and spent two cents. How many cents had he left?

d. A little girl had six cents, and her father gave her three cents more. She bought an apple for two cents. How many cents had she left?

e. There were twelve eggs in a nest. Lucy took four of them. How many did she leave?

f. If a quart of milk costs six cents, how much will two quarts of milk cost?

g. If three boxes cost six cents, how much will one box cost?

h. If three papers of pins cost nine cents, how many cents will one paper cost?

i. How many sticks three inches long can be made from a stick a foot long?

j. How many strings four inches long can be cut from a string that is a foot long?

k. Ten inches are how many inches less than a foot?

l. Four inches are how many inches less than a foot?

m. How many inches less than a foot are five inches and four inches?

n. I had ten cents. I bought a lemon for three cents and a yeast cake for two cents. How many cents had I left?

Addition and Subtraction

Practice upon these until the results can be given quickly.

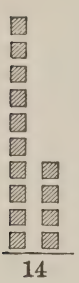
Add:

a.	4	9	7	6	5	3	3
	6	2	3	2	4	9	6
b.	3	8	9	7	6	4	4
	5	2	0	1	4	5	6
c.	2	3	5	8	3	6	7
	7	8	5	4	7	5	5

Subtract:

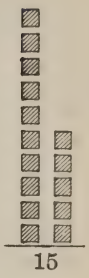
d.	5	7	8	9	9	10	7
	3	4	2	3	6	4	2
e.	8	9	7	10	11	8	10
	6	4	5	5	6	5	3
f.	9	10	11	11	12	12	12
	5	6	3	8	6	3	8

g.	*h.*	*i.*
$8 + 2 = ?$	$5 + 4 = ?$	$5 + 5 = ?$
$8 + 4 = ?$	$7 + 3 = ?$	$4 + 5 = ?$
$10 + 2 = ?$	$7 + 5 = ?$	$9 + 3 = ?$
$8 + 3 = ?$	$4 + 6 = ?$	$5 + 6 = ?$
$6 + 5 = ?$	$6 + 6 = ?$	$4 + 7 = ?$



Ten and three are thirteen.
Ten and four are fourteen.
Ten and five are fifteen.

$10 + 3 = 13$	10	10	10
$10 + 4 = 14$	3	4	5
$10 + 5 = 15$	13	14	15



a. Ten cents and four cents are — cents.

b. Ten cents and five cents are — cents.

c. Ten cents and — cents are thirteen cents.

d. Thirteen cents less three cents are — cents.

e. Fifteen cents less five cents are — cents.

f. Fourteen cents less — cents are ten cents.

g. Twelve and two are —.

h. Eleven and — are fourteen.

i. Eight and seven are —.

j. Twelve and — are fifteen.

k. Nine and four are —.

l. Seven and six are —.

m. Fourteen less eight are —.

n. Fifteen less ten are —.

o. Fourteen less — are eight.

p. Fifteen less — are ten.

q. Thirteen less five are —.

r. Fifteen less two are —.

Problems

a. A hen sat upon 13 eggs and hatched 7 chickens. How many of the eggs did not hatch?

b. Another hen sat upon 14 eggs and hatched 8 chickens. How many eggs were there that this hen did not hatch?

c. One hen took care of both broods of chickens. How many chickens were there in all?

d. In 14 days there are 4 days when there is no school. How many school days are there in 14 days?

e. Agnes is 15 years old, and Belle is 5 years younger. How old is Belle?

f. Gertrude is 6 years younger than Marion. Gertrude is 8 years old. How old is Marion?

g. A milkman had 13 quarts of milk in a can. He sold 3 quarts at one house and 5 quarts at another. How many quarts had he left?

h. In the first class there are 9 boys and 4 girls. How many children are there in the class?

i. In the second class there are 14 children. 8 of them are girls. How many are boys?

j. Mary bought a loaf of bread for 5 cents, a quart of milk for 6 cents, and a yeast cake for 2 cents. How much did they all cost?

k. She gave the man 15 cents. How many cents did he give her back?

l. What would be the cost of 2 quarts of milk at 5 cents a quart and 2 lemons at 2 cents each?

m. There are 6 electric lights in one room and 8 in another. How many lights are there in both rooms?

a. How many 7's are there in 14?
b. How many 2's in 14?
c. How many 5's in 15?
d. How many 3's in 15?

e. 7 is contained in 14 — times.
f. 2 is contained in 14 — times.
g. 5 is contained in 15 — times.
h. 3 is contained in 15 — times.

i. Two 7's and 1 are —.
j. Three 2's and 1 are —.
k. Five 2's and 1 are —.
l. Two 2's and 7 are —.
m. Two 5's and two 2's are —.
n. Four 2's and 7 are —.

o. Two 3's and 2 are —.
p. Two 5's and 3 are —.
q. Two 3's and 5 are —.
r. Three 3's and 1 are —.
s. Three 3's and 5 are —.
t. Two 5's and two 2's are —.

Problems

a. If 12 cents are divided into 4 equal piles, how many will there be in each pile?

b. If 15 cents are divided into 5 equal piles, how many will there be in each pile?

c. How many 2-cent stamps can I buy for 10 cents?

d. How many 2-cent stamps can I buy for 14 cents?

e. How many 3-cent stamps can I buy for 12 cents?

f. How many 5-cent stamps can I buy for 15 cents?

g. What will be the cost of two 5-cent stamps and two 2-cent stamps?

h. What will be the cost of three 3-cent stamps and two 2-cent stamps?

i. A boy walked 8 miles in the forenoon and 5 miles in the afternoon. How many miles did he walk in all?

j. There are 12 months in a year. If 6 months of the year are gone, how many months are there left?

k. If 5 months of the year are gone, how many months are there left?

l. How many months are 1 year and 3 months?

m. A year is how many times 3 months?

n. A year is how many times 4 months?

o. In a week there are 7 days. How many days are there in 2 weeks?

p. How many days are there in a week and 5 days?

q. Jennie's vacation was 2 weeks long. She spent all of it but 5 days with her aunt. How many days did she spend with her aunt?

Problems

a. If 1 book costs 2 dollars, how much will 6 such books cost?

b. If 1 pencil costs 3 cents, how many pencils can I buy for 9 cents?

c. Ruth is 6 years old, and her sister is twice as old as she is. How old is her sister?

d. Carl is 10 years old. How old was he four years ago?

e. How old will he be in 2 years?

f. A little girl has some stamps, and her brother has twice as many. He has 6 stamps. How many has she?

g. I had 15 cherries and ate 6 of them. How many had I left?

h. I had 10 letters from a friend and received 4 more. How many had I then?

i. May went to the store with 14 cents in her pocket. She bought a blank book for 5 cents and 2 pencils for 3 cents each. How much money had she left?

j. There are 13 children in the class. 5 of them are boys. How many girls are there?

k. How many 3's are there in 12?

l. How many 2-cent stamps can I buy for 14 cents?

m. How many 3-cent stamps can I buy for 15 cents?

n. How many 5-cent stamps can I buy for 15 cents?

o. What will be the cost of three 2-cent stamps and one 5-cent stamp?

p. There were 14 lilies in the pond. A boy picked 6 of them. How many were there left?

Review

Read the notes on pages 9, 14, 18, and 21.

Add:

a.

3	2	5	6	8	4	3
2	6	2	0	1	4	4
1	0	4	3	2	2	0
4	3	1	1	2	2	5

Subtract:

b.

10	9	11	12	12	14	15
5	2	1	4	6	4	5

c.	*d.*	*e.*
$7+5=?$	$9+3=?$	$12+3=?$
$10+3=?$	$6+6=?$	$15-3=?$
$12-4=?$	$11-5=?$	$9+5=?$
$7+7=?$	$11+4=?$	$10+3=?$
$8-3=?$	$14-6=?$	$15-7=?$
$9+6=?$	$10+5=?$	$11+3=?$

f.	*g.*	*h.*
$4\times2=?$	$8\div4=?$	$3\times5=?$
$4\times3=?$	$9\div3=?$	$2\times7=?$
$3\times3=?$	$10\div5=?$	$15\div5=?$
$2\times7=?$	$10\div2=?$	$2\times6=?$
$7\times2=?$	$15\div3=?$	$12\div4=?$
$6\times2=?$	$14\div7=?$	$5\times3=?$

Problems

a. Mary had 8 badges, and a friend gave her 4 more. How many badges had she then?

b. George had 5 cents in one pocket and 4 cents in the other pocket. His father gave him 3 cents more. How many had he then?

c. Mary has 7 pictures, and Ruth has 5 more than Mary has. How many has Ruth?

d. A bluebird laid 5 eggs each time and hatched 4 of them. She raised three broods of young birds in one summer. How many birds did she raise?

e. A dragon fly has 4 wings. How many wings have 3 dragon flies?

f. A hen had 12 chickens. 5 chickens died. How many chickens had she left?

g. One hen had 8 chickens, and another hen had 6 chickens. How many had both hens?

h. 5 chickens died. How many were left?

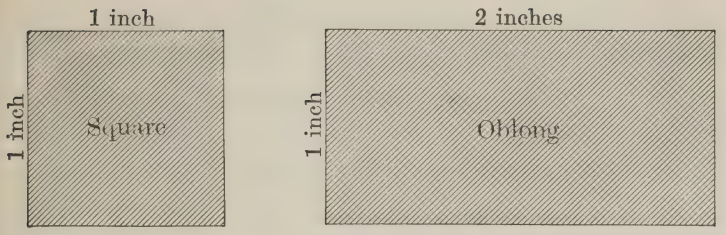
i. There were 9 birds in a tree and 6 birds on the ground. The birds on the ground flew up to the tree. How many were there then in the tree?

j. A bell rang 8 times in the morning, 3 times in the afternoon, and 4 times in the evening. How many times did it ring during the day?

k. There are 5 cows in one place in the barn, 3 cows in another place, and 4 cows in another place. How many are there in all?

l. 8 of the cows give milk. How many of them do not give milk?

Square — Oblong



First make squares and oblongs for these problems. Either rule them with a pencil or cut them out. Afterwards, in review, *imagine* the figures.

a. If the side of a square is one inch, how many inches is it around the square?

b. How many inches is it around a square, if each side is 2 inches?

c. How many times as far is it around a two-inch square as around a one-inch square?

d. If an oblong is 2 inches long and an inch wide, how many inches is it around the oblong?

e. How many inches is it half way around the oblong?

f. How many inches is it around an oblong which is 3 inches long and an inch wide?

g. How many inches is it around an oblong which is 3 inches long and 2 inches wide?

h. How many inches is it half way around the oblong?

i. How many inches is it around a 3-inch square?

j. How many more inches is it around an oblong that is 4 inches long and 3 inches wide than around a 3-inch square?

Problems

a. How many inches is it half way around a 4-inch square?

b. If it is 12 inches around a square, how long is one side of the square?

c. How far is it around three sides of the square?

d. If it is 6 inches around an oblong, how far is it half way around it?

e. If the oblong is an inch wide, how long is it?

f. Charles can walk 3 miles in an hour. How far can he walk in 3 hours?

g. How many miles can he walk in 4 hours?

h. James walked 8 miles in 2 hours. How many miles did he walk in one hour?

i. If he should walk 10 miles in 5 hours, how many miles would he walk in an hour?

j. If bananas cost 3 cents each, how many can I buy for 12 cents?

k. Joseph wished to buy a book for 15 cents. He had 12 cents. How many more cents would it take?

l. A farmer had 13 sheep and sold 5 of them. How many had he left?

m. Mary had 11 cents. She bought 2 pencils for 3 cents each. How many cents did she pay for them?

n. How many cents had she left?

o. Herbert bought a pad for 6 cents, an eraser for 2 cents, and some pens for 5 cents. How much did they all cost?

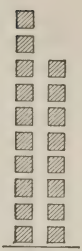
p. Maud's canary bird is 8 years old and Maud is 15 years old. What is the difference between their ages?

Sixteen — Seventeen — Eighteen

Ten and six are sixteen.

Ten and seven are seventeen.

Ten and eight are eighteen.



$10 + 6 = 16$

$10 + 7 = 17$

$10 + 8 = 18$

10	10	10
6	7	8
16	17	18

a. Ten and three are —.

b. Ten and three and three are —.

c. Ten and four and three are —.

d. Sixteen less three are —.

e. Seventeen less seven are —.

f. Sixteen less five are —.

g. Seventeen less five are —.

h. Seventeen less eight are —.

i. Ten and five are —.

j. Ten and five and three are —.

k. Ten and four and four are —.

l. Ten and two and five are —.

m. Eighteen less eight are —.

n. Eighteen less six are —.

o. Eighteen less ten are —.

p. Eighteen less sixteen are —.

Problems

a. There were 10 snowstorms in January and 7 in February. How many were there in both months?

b. Carrie bought 6 paint brushes for 2 cents each and one for 3 cents. How much did they all cost?

c. A man bought 18 sheep and sold 6 of them. How many did he keep?

d. A man has 5 cows in one field, 5 in another, and 4 in another. How many cows has he?

e. Frank had 16 cents and paid 5 cents for car fare. How many cents had he left?

f. He had 11 cents and earned 7 cents more. How many cents had he then?

g. A boy is 8 years old. In how many years will he be 13 years old?

h. Bertha is 16 years old. How old was she 4 years ago?

i. In the garden there are 7 pansies, 3 roses, and 5 pinks. How many flowers are there?

j. There were 18 tulips in the garden, and Mary picked 8 of them. How many were left?

k. Thomas walked 10 miles on Monday and 6 miles on Tuesday. How far did he walk in the two days?

l. He rode 18 miles from home one day, and walked back 8 miles the next day. How far from home was he then?

m. A nuthatch is about 5 inches long, and a magpie 17 inches long. How much longer is a magpie than a nuthatch?

Original Problems

Make problems from these stories and give the answers:

Let several pupils state their problems, and let the class give the answers.

a. Fred had 10 marbles, and Willie had 7 marbles.

b. Fred gave Willie 2 of his marbles.

c. Carl is 4 years older than his sister. His sister is 12 years old.

d. A boy walked 5 miles every day for 3 days.

e. 18 books are given to 3 children.

f. A mother had 4 children and gave each child 4 ribbons.

g. A man bought a watch for 13 dollars and sold it for 17 dollars.

h. He bought another watch for 12 dollars and sold it for 9 dollars.

i. A lady bought some Christmas cards for 3 cents each.

j. She bought some envelopes for 2 cents each.

k. A boy had 5 cents to spend for marbles. He could buy 3 marbles for a cent.

l. Another boy had 4 cents.

m. A man sold berries for 7 cents a box. A lady bought 2 boxes.

n. Jennie had 15 cents. She bought some apples.

o. Robert bought some pears for 2 cents each.

p. A kingfisher is 7 inches long.

q. An ivy leaf has 5 lobes.

r. A butterfly has 4 wings.

Addition

First add the columns upwards and then downwards. See whether the results agree. Review the page repeatedly until the columns can be added very quickly. For oral work simply state the results. For practice in writing columns of figures neatly, copy the examples and write the results.

Add:

a.	5	2	4	3	2	7
	0	1	2	3	3	0
	2	6	4	3	5	3
	1	3	3	1	4	6
b.	5	6	3	4	7	7
	3	0	1	2	1	0
	5	6	3	5	2	5
	2	3	7	4	8	5
c.	7	3	3	2	4	2
	0	6	0	8	3	6
	8	5	3	5	5	5
	2	1	9	1	3	5
d.	2	3	2	9	2	5
	0	1	5	0	8	6
	8	6	4	2	3	4
	5	6	6	7	4	3
e.	5	2	6	5	4	6
	1	4	1	5	4	3
	0	5	5	4	5	6
	3	6	4	3	5	3

a. A magpie is 17 inches long. Its tail is 11 inches long. How long are its head and body?

b. A kingfisher is 7 inches long. How much longer is a magpie than a kingfisher?

c. There are 8 roses and 7 pinks in the garden. How many flowers are there in all?

d. There were 6 pears on the ground under one tree and 9 pears under another tree. How many pears were there under both trees?

e. Clara picked up 10 of the pears. How many did she leave on the ground?

f. There are 6 apples on the ground and 10 apples on the tree. Fred shook off all the apples. How many were there on the ground then?

g. There are 8 boys and 6 girls in the class. How many are there in the class?

h. 3 boys and 2 girls were absent. How many were present?

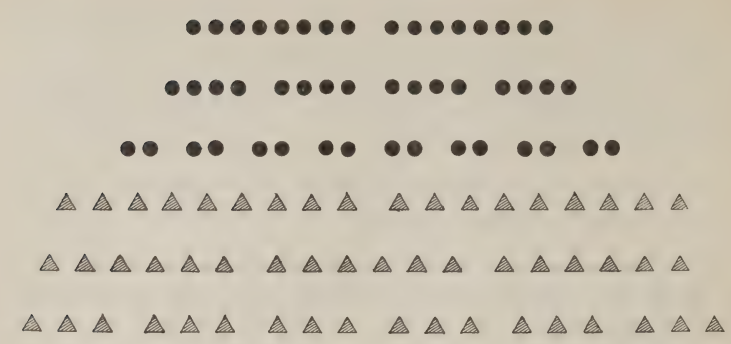
i. Henry found 6 eggs in one nest, 2 in another, and 8 in another. How many eggs did he find?

j. Kate cooked 10 of the eggs for breakfast. How many were left?

k. Charles bought 10 papers and sold them all. He then bought 8 papers more and sold 5 of them. How many papers did he buy in all?

l. How many did he sell?

m. He paid 1 cent for 2 papers. How much did he pay for all the papers that he bought?



Read the note on page 19.

a. How many 8's are there in 16?
b. How many 4's are there in 16?
c. How many 2's in 16?

d. How many 9's are there in 18?
e. How many 6's in 18?
f. How many 3's in 18?
g. How many 2's in 18?

h. Two 8's and 2 are —.
i. Three 4's and 2 are —.
j. Three 4's less 2 are —.
k. Seven 2's and 1 are —.
l. Seven 2's less 1 are —.

m. Two 9's less 3 are —.
n. Two 6's and 3 are —.
o. Six 3's less 2 are —.
p. Five 3's less 2 are —.
q. Seven 2's and 3 are —

a. Carl's book is 5 inches long and 4 inches wide. How many inches is it around the book?

b. How many inches is it half way around the book?

c. Willie had a stick 14 inches long. He cut off a piece 3 inches long and then cut off a piece 2 inches long. How long was the stick then?

d. A man had 16 houses and sold 10 of them. How many had he left?

e. Henry had 8 cents and he earned 5 cents more. How many cents had he then?

f. If sandpaper costs 2 cents a sheet, how many sheets can I buy for 12 cents?

g. How many can I buy for 16 cents?

h. How much will 9 sheets cost?

i. Mary bought a book for 10 cents and a pencil for 7 cents. How much did they both cost?

j. She bought some corn cakes for 8 cents and gave the man 15 cents. How many cents did he give her back?

k. A girl is 9 years old. How many years ago was she 5 years old?

l. In how many years will she be 15 years old?

m. In how many years will she be 18 years old?

n. There were 8 couples skating on the ice. How many people were skating there?

o. Lilac buds grow in pairs. How many buds are there in 7 pair of buds?

To count by 2's say, "two, four, six," etc.
To count by 3's say, "three, six, nine," etc.

a.

Count by 2's to 18.
Count by 3's to 18.
Count by 4's to 18.
Count by 5's to 18.
Count by 6's to 18.

b.

Three 2's are —.
Five 2's are —.
Seven 2's are —.
Nine 2's are —.
Six 2's are —.

c.

Two 3's are —.
Four 3's are —.
Six 3's are —.
Three 3's are —.
Five 3's are —.

d.

Four 2's are —.
Eight 2's are —.
Two 4's are —.
Two 8's are —.
Seven 2's are —.

e.

Two 4's are —.
Four 4's are —.
Three 4's are —.
Two 5's are —.
Three 5's are —.

f.

Two 6's are —.
Three 6's are —.
Two 7's are —.
Two 8's are —.
Two 9's are —.

g.

Five 3's are —.
Three 5's are —.
Three 6's are —.
Six 3's are —.
Eight 2's are —.

h.

Two 7's are —.
Seven 2's are —.
Two 9's are —.
Nine 2's are —.
Six 2's are —.

Drill Table

For practice in neat work, copy the examples and supply the answers. For a quick written recitation write only the letters of the groups and the answers that come under each. Practice orally until the answers can be given quickly.

a.	*b.*	*c.*
$2 \times 2 = ?$	$8 \times 2 = ?$	$2 \times 3 = ?$
$4 \times 2 = ?$	$5 \times 2 = ?$	$5 \times 3 = ?$
$3 \times 2 = ?$	$7 \times 2 = ?$	$3 \times 3 = ?$
$5 \times 2 = ?$	$6 \times 2 = ?$	$4 \times 3 = ?$
$6 \times 2 = ?$	$9 \times 2 = ?$	$6 \times 3 = ?$

d.	*e.*	*f.*
$2 \times 4 = ?$	$4 \div 2 = ?$	$14 \div 2 = ?$
$4 \times 4 = ?$	$8 \div 2 = ?$	$18 \div 2 = ?$
$3 \times 4 = ?$	$12 \div 2 = ?$	$16 \div 2 = ?$
$2 \times 5 = ?$	$6 \div 2 = ?$	$12 \div 2 = ?$
$3 \times 5 = ?$	$10 \div 2 = ?$	$10 \div 2 = ?$

g.	*h.*	*i.*
$6 \div 3 = ?$	$12 \div 4 = ?$	$12 \div 6 = ?$
$12 \div 3 = ?$	$8 \div 4 = ?$	$18 \div 6 = ?$
$18 \div 3 = ?$	$16 \div 4 = ?$	$14 \div 7 = ?$
$9 \div 3 = ?$	$15 \div 5 = ?$	$16 \div 8 = ?$
$15 \div 3 = ?$	$10 \div 5 = ?$	$18 \div 9 = ?$

j.	*k.*	*l.*
$3 \times 4 = ?$	$7 \times 2 = ?$	$2 \times 3 = ?$
$3 \times 5 = ?$	$14 \div 2 = ?$	$3 \times 2 = ?$
$3 \times 6 = ?$	$12 \div 4 = ?$	$6 \div 2 = ?$
$15 \div 3 = ?$	$4 \times 3 = ?$	$6 \div 3 = ?$
$18 \div 3 = ?$	$18 \div 6 = ?$	$18 \div 9 = ?$

a. A boy wears 2 shoes. 7 boys wear — shoes.

b. A horse wears 4 shoes. 4 horses wear — shoes.

c. It will take — shoes for 9 boys.

d. It will take — shoes for 3 horses.

e. An ox wears 8 shoes. 2 oxen wear — shoes.

f. 6 pair of horses are — horses.

g. In 4 four-horse teams there are — horses.

h. Milk costs 6 cents a quart. I can buy — quarts for 12 cents.

i. 3 quarts would cost — cents.

j. Sugar costs 5 cents a pound. For 15 cents I can buy — pounds.

k. There are 6 girls in each row. In 3 rows there are — girls.

l. There are 3 books on each desk. On 5 desks there are — books.

m. We read 2 pages of the book every day. In 5 days we read — pages.

n. It will take — days to read 16 pages.

o. In the spelling lesson there are 4 words in each column. There are 3 columns. In all there are — words.

p. Bessie learned to spell 12 words in 4 days. She learned — words each day.

q. In 6 days she could learn to spell — words.

r. There are 3 rows of grapevines. There are 6 vines in each row. In all there are — vines.

s. There are 18 trees in 2 rows. There are — trees in each row.

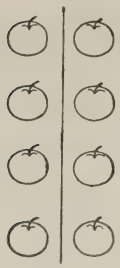
Review

In the first example of *a* say "seven, ten, fourteen, sixteen." In the fourth example of *b* say "twelve, ten, sixteen, thirteen." Read the note on page 38.

a.	*b.*
$5+2+3+4+2=?$	$8+2+3+4-3=?$
$4+2+5+1+4=?$	$6+4+5+2-5=?$
$3+3+2+6+1=?$	$10+2+3+3-4=?$
$6+2+4+2+3=?$	$8+4-2+6-3=?$
$2+2+4+4+3=?$	$12-4+2-5+4=?$

Add:

c.	2	4	3	5	4	2
	5	1	1	4	0	1
	0	5	3	1	5	0
	3	6	5	2	0	3
	6	2	5	3	6	8
d.	6	4	1	6	2	1
	1	2	4	2	4	0
	5	1	0	2	1	3
	0	5	3	5	6	2
	5	3	8	2	5	9
e.	4	7	3	1	2	4
	1	2	3	5	1	2
	0	1	6	2	8	3
	2	3	0	2	1	2
	8	2	4	3	3	6



a. One half of 6 balls are — balls.

b. One half of 8 apples are — apples.

c. One half of 12 eggs are — eggs.

d. One half of 10 chickens are — chickens.

e. One half of 14 acorns are — acorns.

f. One half of 18 blocks are — blocks.

g. One half of 16 boys are — boys.

h. There are 12 in a dozen. A dozen eggs and 2 eggs more are — eggs.

i. Half a dozen eggs are — eggs.

j. Half a dozen eggs and 3 eggs more are — eggs.

k. A dozen eggs less 3 eggs are — eggs.

l. Half a dozen eggs less 2 eggs are — eggs.

m. A half dozen eggs and another half dozen eggs are — eggs.

n. A dozen buttons and half a dozen buttons are — buttons.

o. A dozen and a half dozen buttons are — times a half dozen buttons.

a. If eggs cost 16 cents a dozen, how much will half a dozen eggs cost?

b. How much will 3 eggs cost?

c. If eggs cost 12 cents a dozen, how much will 3 eggs cost?

d. How much will 15 eggs cost?

e. If bananas cost 8 cents a dozen, how much will half a dozen cost?

f. How much will 2 dozen cost?

g. How much will a dozen and a half cost?

h. A man bought half a dozen pencils at 16 cents a dozen. How much did they cost?

i. He sold them for 2 cents each. How much did he get for them?

j. How many cents did he gain?

k. A man buys eggs at 10 cents a dozen and sells them at 14 cents a dozen. How much does he gain when he sells a dozen?

l. How much does he gain when he sells half a dozen?

m. How much does he pay for a dozen and a half?

n. I buy pens at 8 cents a dozen and sell them for a cent each. How much do I gain when I sell a dozen?

o. How much do I gain when I sell a dozen and a half?

p. Peaches cost 10 cents a dozen. How much will 6 peaches cost at that rate?

q. If I buy half a dozen peaches for 10 cents and sell them for 3 cents each, how much shall I gain?

a. Three 2's and 1 are —.

b. 2 is contained in 7 — times, and there is — left over.

c. Two 5's and 3 are —.

d. 5 is contained in 13 — times, and there are — left over.

e. Four 3's and 2 are —.

f. 3 is contained in 14 — times, and there are — over.

g. 5 is contained in 15 — times.

h. 5 is contained in 17 — times, and there are — over.

i. 2 is contained in 15 — times, and there is — over.

j. In 9 there are — 3's.

k. In 11 there are — 3's and — over.

l. In 10 there are — 4's and — over.

m. In 14 there are — 5's and — over.

n. In 17 there are — 5's and — over.

o. In 18 there are — 3's.

p. In 18 there are — 6's.

q. In 18 there are — 9's.

r. In 18 there are — 5's and — over.

s. In 12 there are two 3's and — 2's.

t. In 11 there are two 3's, two 2's, and —.

u. In 14 there are two 6's and —.

v. In 17 there are two 4's, two 3's, and —.

w. In 16 there are two 7's and —.

x. In 18 there are four 4's and —.

Original Problems

Make problems and give the answers:

a. Anna wished to buy some pears. 2 pears would cost 6 cents.

b. She bought some eggs for her mother. 4 eggs cost 8 cents.

c. I wish to buy some pencils. They cost 10 cents a dozen.

d. I bought some flower pots at the rate of 5 for 10 cents.

e. A boy bought half a dozen pencils for 7 cents and then sold them.

f. Pens cost 10 cents a dozen. I bought a dozen and a half.

g. A little girl had a piece of ribbon a foot long and cut it into halves.

h. She cut each of the halves again into 2 equal pieces.

i. She had a string a foot long and cut it into 3 equal pieces.

j. Ruth went to the store to buy bread and milk. She had 18 cents in her pocket.

k. Harry bought some marbles. After he bought them, he had 2 cents left. 3 marbles cost a cent.

l. Alice bought some crackers for 5 cents. They cost 10 cents a pound.

m. She bought some butter at 16 cents a pound.

n. She bought some eggs at 14 cents a dozen.

o. I bought 3 pounds of sugar.

p. Nails cost 3 cents a pound.

Addition and Subtraction

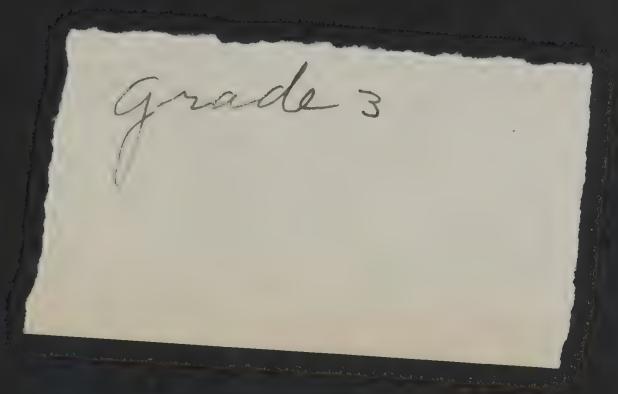
Do not yet add and subtract the columns of ones and tens separately. Say "5 and 10 are 15," and "12 from 16 leaves 4."

Add:

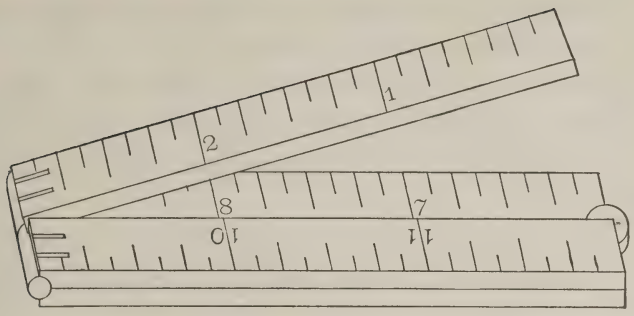
a.	4	6	7	3	4	4	8	2
	5	3	2	5	4	3	1	6
b.	3	4	5	7	8	6	4	2
	7	6	5	4	5	7	8	9
c.	4	5	7	7	6	7	5	8
	9	8	5	7	9	8	9	8
d.	6	8	8	9	5	6	4	4
	6	6	9	5	10	11	12	14

Subtract:

e.	6	9	9	8	10	10	9	7
	3	5	4	2	5	3	2	2
f.	7	8	9	9	10	11	9	10
	5	3	6	1	6	5	8	2
g.	12	12	14	14	15	15	16	16
	6	3	7	8	5	10	8	12
h.	13	14	17	17	13	12	12	18
	6	4	7	10	5	9	8	9
i.	12	15	13	16	11	12	17	18
	7	7	8	7	4	6	9	11


Grade 3

Inches and Feet



Give the answers without assistance if possible. If not, use the ruler and pencil, and afterwards, in review, imagine the measures.

a. There are 12 inches in a foot. How many inches are there in half a foot?

b. How many inches are there in a foot and a half?

c. What part of a foot is 6 inches?

d. In 18 inches there is what part of a foot more than a whole foot?

e. How many sticks 6 inches long could be made from a stick a foot long?

f. How many sticks 6 inches long could be made from a stick a foot and a half long?

g. How many times 3 inches is a foot?

h. How many times 3 inches is a foot and a half?

i. A piece of paper 6 inches long can be cut into how many pieces 2 inches long?

j. A piece of paper a foot long can be cut into how many pieces 2 inches long?

k. How many half inches are there in 2 inches?

l. How many half inches are there in 6 inches?

a. If there are 6 desks in each row in the schoolroom, how many desks are there in 2 rows?

b. How many desks are there in 2 rows and a half?

c. How many desks are there in one row and a half?

d. If eggs cost 16 cents a dozen, how much will half a dozen cost?

e. How much will 6 eggs cost at 10 cents a dozen?

f. If pens cost 8 cents a dozen, how much will 6 pens cost?

g. How much will 3 pens cost?

h. Mary had 15 cents. She bought a pad for 5 cents and a pencil for 3 cents. How much money had she left?

i. Arthur went to the store and bought 2 quarts of milk at 5 cents a quart and a lemon for 2 cents. He handed the man 15 cents. How much change did the man give him?

j. How much money will it take to buy 2 pounds of rice at 6 cents a pound and 2 oranges at 3 cents each?

k. What will be the cost of 2 loaves of bread at 5 cents a loaf and 3 oranges at 1 cent each?

l. How much will half a pound of butter cost at 18 cents a pound?

m. Five children can sit on a settee. How many can sit on 3 settees?

n. If 6 children could sit on each settee, how many could sit on 3 settees?

o. There are 5 desks in a row. How many desks are there in 3 rows?

p. There are 4 eggs in each nest. How many eggs are there in 4 nests?

10 ones make 1 ten, and twice 10 ones make 2 tens.

20

Ten and nine are nineteen.

Two tens are twenty.

Two tens and one are twenty-one.

$10 + 9 = 19$

$10 + 10 = 20$

$20 + 1 = 21$

10	10	20
9	10	1
19	20	21

21

a. Ten and five and four are —.

b. Ten and five and five are —.

c. Ten and five and six are —.

d. Ten and six and three are —.

e. Ten and seven and three are —.

f. Nine and nine and one are —.

g. Nine and nine and three are —.

h. Eight and eight and four are —.

i. Eight and six and four are —.

j. Eight and six and six are —.

k. Twenty less five are —.

l. Twenty less eight are —.

m. Twenty less one are —.

n. Twenty-one less two are —.

o. Twenty-one less six are —.

Problems

a. James bought 2 quarts of peanuts at 6 cents a quart and had 3 cents left. How many cents had he at first?

b. There are 9 birds on one tree and 10 on another. How many birds are on both trees?

c. There were 10 bonfires on one street and 11 on another. How many were there on both streets?

d. I bought some paper for 12 cents and some envelopes for 5 cents. How much did I pay for both?

e. A farmer has 8 black cows and 11 red cows. How many cows has he?

f. Ella picked 7 quarts of berries, and Sadie picked 10 quarts. How many quarts did they both pick?

g. Delia bought some thread for 8 cents and some ribbon for 10 cents. She had 2 cents left. How much money had she at first?

h. A boy had 19 cents. He bought some pears for 8 cents and some candy for 6 cents. How many cents had he left?

i. There were 12 Indians in one camp and 8 in another. How many were there in both camps?

j. George found 7 eggs in one nest, 6 in another, and 5 in another. How many eggs did he find?

k. There are 10 pickets on one gate and 9 on the other. How many pickets are there on both gates?

l. There are 8 panes of glass in one window and 12 panes in another. How many less are there in the first than in the second?

m. There are 11 electric lights on one street and 9 on another. How many are there on both streets?

Review

Read the notes on pages 38, 45, and 50.

a.	*b.*
$10+5+3+2=?$	$9+6+4-2=?$
$6+4+5+3=?$	$12+4+5-3=?$
$8+4+3+4=?$	$14-6+8-4=?$
$7+2+6+5=?$	$20-10+11-6=?$

Add:

c.	4	3	4	6	5	1
	6	0	5	1	4	5
	3	5	0	2	3	2
	1	8	2	6	4	6
	5	1	9	2	2	2
	1	3	1	3	3	3
	–	–	–	–	–	–
d.	3	2	4	8	3	4
	2	6	0	1	3	4
	1	3	5	0	2	3
	5	0	2	2	1	1
	4	1	2	4	4	3
	4	8	7	5	6	6
	–	–	–	–	–	–

Subtract:

e.	10	9	12	9	13	15
	4	2	5	3	5	3
	—	–	—	–	—	—
f.	16	17	18	19	20	21
	10	12	8	7	5	11
	—	—	—	—	—	—

See pages 23, 33, and 51.

a. 15 inches are how many inches more than a foot?

b. 10 inches are how many inches less than a foot?

c. 18 inches are how many inches more than a foot?

d. 8 inches are how many inches less than a foot?

e. 6 inches, 4 inches, and 5 inches make how many inches more than a foot?

f. 10 inches, 5 inches, and 4 inches make how many inches more than a foot?

g. If each side of a square measures 2 inches, how many inches is it around the square?

h. How many inches is it half way around the square?

i. If one side of a square measures 4 inches, how many inches is it half way around the square?

j. If an oblong is 6 inches long and 2 inches wide, how many inches is it around the oblong?

k. How many inches is it half way around the oblong?

l. How many inches is it around an oblong which is 8 inches long and 2 inches wide?

m. How many inches is it half way around an oblong which is 12 inches long and 6 inches wide?

n. How many inches is it around a 3-inch square?

o. How many inches is it around a 5-inch square?

p. How many inches is it half way around an oblong which is 12 inches long and 9 inches wide?

a. How many days are there in 2 weeks?

b. How many days are there in 3 weeks?

c. How many days are there in 1 week and 3 days?

d. How many days are there in 2 weeks and 2 days?

e. How many days are there from Sunday night to Monday night?

f. How many days are there from Sunday night to Tuesday night?

g. How many days are there from Sunday morning till Tuesday morning?

h. How many days are there from Monday morning till Friday morning?

i. 12 days are how many days more than a week?

j. 12 days are how many days less than 2 weeks?

k. 17 days are how many days more than 2 weeks?

l. 17 days are how many days less than 3 weeks?

m. From Sunday morning to the next Sunday morning there are how many days?

n. From Monday to the next Saturday there are how many days?

o. How many days are there from Friday to the next Tuesday?

p. How many days are there from Wednesday to the next Monday?

q. How many days are there from Monday to Saturday of the next week?

Read the note on page 19.

a. How many 10's are there in 20?
b. How many 5's in 10?
c. How many 5's in 20?
d. How many 4's in 20?
e. How many 2's in 4?
f. How many 2's in 20?

g. How many 7's are there in 21?
h. How many 3's in 21?

i. Two 10's and 1 are —.
j. Three 5's and 2 are —.
k. Four 4's less 2 are —.
l. Two 7's and 6 are —.
m. Six 3's and 2 are —.

n. 10 is contained in 20 —.
o. 4 is in 20 — times.
p. 5 is in 20 — times.
q. 2 is in 20 — times.

r. 7 is in 21 — times.
s. 3 is in 21 — times.

a. How much will 7 pencils cost, if 1 pencil costs 2 cents?

b. At 2 cents each how many pencils can I buy for 10 cents?

c. How many pencils could I buy for 20 cents?

d. If oranges are 3 cents each, how much will 5 oranges cost?

e. How much would 7 oranges cost?

f. How many oranges could I buy for 12 cents?

g. How many oranges could I buy for 18 cents?

h. If a stick 20 inches long is cut into pieces 4 inches long, how many pieces will there be?

i. If it is cut into pieces 5 inches long, how many pieces will there be?

j. Mabel had a piece of ribbon 21 inches long. She divided it into 3 equal pieces. How long was each piece?

k. If she had divided it into 7 equal pieces, how long would each piece have been?

l. If I should walk 2 miles an hour, how many hours would it take to walk 12 miles?

m. How many miles should I walk in 10 hours?

n. How many days are there in 2 weeks?

o. How many weeks are there in 21 days?

p. It takes 7 steps to go across the room. How many steps will it take to go across and back?

q. How many steps will it take to go across, back, and across again?

Ginn Book 1, p. 22

Review

The **sum** of numbers is found by adding them.

The **difference** between two numbers is found by subtracting one from the other.

The **product** of two numbers is found by multiplying one by the other.

The **quotient** of two numbers is found by dividing one by the other.

a. The sum of 10 and 5 is —.
b. The sum of 10 and 10 is —.
c. The sum of 12 and 6 is —.
d. The sum of 14 and 7 is —.

e. The difference between 15 and 5 is —.
f. The difference between 7 and 14 is —.
g. The difference between 17 and 4 is —.
h. The difference between 5 and 20 is —.

i. The product of 4 and 3 is —.
j. The product of 6 and 2 is —.
k. The product of 5 and 3 is —.
l. The product of 7 and 2 is —.

m. The quotient of 10 and 2 is —.
n. The quotient of 12 and 3 is —.
o. The quotient of 18 and 6 is —.
p. The quotient of 20 and 5 is —.

q. The sum of 9 and 3 is —.
r. The difference between 9 and 3 is —.
s. The product of 9 and 3 is —.
t. The quotient of 9 and 3 is —.

Original Problems

Make problems and give the answers:

a. Mr. Williams has 13 cows in one field and 7 in another.

b. He has 12 sheep and some lambs.

c. Mr. Hunt has 19 farm animals. He has 4 horses, some cows, and some sheep.

d. A boy had 20 cents. He bought some apples. 2 apples cost 5 cents.

e. I have 8 cents, and wish to buy some lemons. 2 lemons cost 3 cents.

f. I bought a 5-cent stamp and four 2-cent stamps.

g. A lady had a piece of cloth 20 inches long and cut off a piece 8 inches long.

h. An oblong is 5 inches long and 2 inches wide.

i. The side of a square is 3 inches long.

j. School closes Friday night and begins Monday morning.

k. Delia went away Tuesday morning and came back Saturday morning.

l. The weather was pleasant from Tuesday to Friday of the next week.

m. Albert had a string 4 inches long and cut it so as to make 4 equal pieces.

n. Martha bought some candy for 12 cents and had 9 cents left.

o. John walked 12 miles in 6 hours.

p. A cell of honeycomb has 6 sides.

q. A dragon fly has 4 wings.

Drill Table

Read the notes on pages 21 and 43.

a.	*b.*	*c.*
$2 \times 2 = ?$	$7 \times 2 = ?$	$3 \times 3 = ?$
$5 \times 2 = ?$	$9 \times 2 = ?$	$5 \times 3 = ?$
$3 \times 2 = ?$	$8 \times 2 = ?$	$6 \times 3 = ?$
$6 \times 2 = ?$	$6 \times 2 = ?$	$4 \times 3 = ?$
$4 \times 2 = ?$	$10 \times 2 = ?$	$7 \times 3 = ?$

d.	*e.*	*f.*
$2 \times 4 = ?$	$2 \times 5 = ?$	$3 \times 7 = ?$
$4 \times 4 = ?$	$3 \times 5 = ?$	$2 \times 8 = ?$
$3 \times 4 = ?$	$2 \times 6 = ?$	$2 \times 9 = ?$
$5 \times 4 = ?$	$3 \times 6 = ?$	$2 \times 10 = ?$
$4 \times 5 = ?$	$2 \times 7 = ?$	$10 \times 2 = ?$

g.	*h.*	*i.*
$6 \div 2 = ?$	$16 \div 2 = ?$	$15 \div 3 = ?$
$10 \div 2 = ?$	$20 \div 2 = ?$	$18 \div 3 = ?$
$14 \div 2 = ?$	$18 \div 2 = ?$	$21 \div 3 = ?$
$8 \div 2 = ?$	$6 \div 3 = ?$	$8 \div 4 = ?$
$12 \div 2 = ?$	$9 \div 3 = ?$	$16 \div 4 = ?$

j.	*k.*	*l.*
$20 \div 4 = ?$	$14 \div 7 = ?$	$2 \times 9 = ?$
$15 \div 5 = ?$	$21 \div 7 = ?$	$18 \div 2 = ?$
$20 \div 5 = ?$	$21 \div 3 = ?$	$7 \times 2 = ?$
$12 \div 6 = ?$	$7 \times 3 = ?$	$14 \div 2 = ?$
$18 \div 6 = ?$	$3 \times 7 = ?$	$20 \div 10 = ?$

a. Bertha has 20 roses ; 8 of the roses are red, and the others are white. How many are white?

b. A man had 19 lambs. He sold 8 lambs at one time and 4 at another. How many did he sell?

c. How many had he left?

d. In the garden there are 17 rows of corn, peas, and beans. There are 9 rows of corn and 4 rows of peas. How many rows of beans are there?

e. John bought 4 melons. He gave 4 cents each for 2 of the melons and 5 cents each for the other two. How much did he give in all?

f. A man sold 3 boxes of berries. He sold 2 boxes for 7 cents each and sold the other box for 5 cents. How many cents did he receive in all?

g. There are 7 birds on each branch. There are birds on 3 branches. How many birds are there in the tree?

h. Eleven of the birds have flown away. How many remain?

i. A man sold a calf for 11 dollars and 2 sheep for 4 dollars each. How many dollars did he receive?

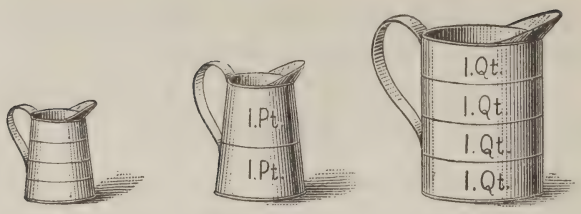
j. He bought 5 pigs for 3 dollars each. How much money had he left?

k. Edith is 18 years old, and Grace is 13 years old. How much older is Edith than Grace?

l. In a yard there are 7 geese, 8 ducks, and 5 hens. How many are there in all?

m. Edward made 20 snowballs. He threw 8 at one boy and 6 at another. How many had he left?

Pints — Quarts — Gallons



One Pint One Quart One Gallon

a. A quart is 2 pints.

b. A quart and a pint are — pints.

c. In 2 quarts there are — pints.

d. In 2 quarts and 1 pint there are — pints.

e. A gallon is 4 quarts.

f. A gallon and 2 quarts are — quarts.

g. In 2 gallons there are — quarts.

h. In 2 gallons and 1 quart there are — quarts.

i. How many pints are there in 2 quarts?

j. How many pints are there in a gallon?

k. How many quarts are there in 2 gallons?

l. How many pints are there in 2 gallons?

m. How many pints are there in 5 quarts?

n. How many pints are there in 3 quarts and 1 pint?

o. How many pints are there in 7 quarts and 1 pint?

p. How many quarts will 4 pints make?

q. How many quarts are there in 8 pints?

r. How many gallons are there in 8 quarts?

Review

Add the columns both upwards and downwards.

After subtracting, prove the answer to be correct by adding it to the smaller number. 3 from 9 leaves 6. 6 and 3 are 9.

After multiplying divide the answer by one of the numbers that have been multiplied together. 3 times 6 are 18. 6 is contained in 18 three times.

After dividing multiply the answer by the divisor. 3 is contained in 12 four times. 4 times 3 are 12.

Add:

a.	3	5	2	3	7	4	2	1
	6	3	0	1	1	2	5	0
	1	4	1	0	3	0	1	2
	4	3	9	2	2	3	8	6
	5	2	3	6	4	6	1	5
	1	1	5	5	1	5	2	3

Subtract:

b.	9	12	12	10	14	14	13	13
	3	6	5	3	7	4	3	10
c.	12	15	15	17	17	20	21	19
	7	5	10	5	7	8	7	7

Multiply:

d.	6	7	4	5	9	3	7	2
	3	2	4	4	2	3	3	6
e.	3	3	4	10	3	2	2	3
	5	4	5	2	7	9	7	6

Divide:

f.	2)4	3)12	8)16	5)15	4)12	9)18
g.	3)15	5)20	3)18	7)21	4)16	3)21

One Half

$\frac{1}{2}$ means one half.

a.	*b.*
$\frac{1}{2}$ of 2 is —.	$\frac{1}{2}$ of 12 is —.
$\frac{1}{2}$ of 4 is —.	$\frac{1}{2}$ of 14 is —.
$\frac{1}{2}$ of 6 is —.	$\frac{1}{2}$ of 16 is —.
$\frac{1}{2}$ of 8 is —.	$\frac{1}{2}$ of 18 is —.
$\frac{1}{2}$ of 10 is —.	$\frac{1}{2}$ of 20 is —.

c. How many pints are there in $\frac{1}{2}$ of a quart?

d. How many quarts are there in $\frac{1}{2}$ of a gallon?

e. How many pints are there in a gallon?

f. How many pints are there in $\frac{1}{2}$ of a gallon?

g. How many pints are there in a quart and a half?

h. How many quarts are there in a gallon and a half?

i. How many quarts are $\frac{1}{2}$ of 6 quarts?

j. How many inches are $\frac{1}{2}$ of 8 inches?

k. How many inches are $\frac{1}{2}$ of 10 inches?

l. How many inches are $\frac{1}{2}$ of a foot?

m. 5 inches are $\frac{1}{2}$ of how many inches?

n. 8 inches are $\frac{1}{2}$ of how many inches?

o. How many inches are $\frac{1}{2}$ of half a foot?

p. How many inches are $\frac{1}{2}$ of a foot and a half?

q. 6 quarts are $\frac{1}{2}$ of how many quarts?

r. 9 days are $\frac{1}{2}$ of how many days?

s. How many are $\frac{1}{2}$ of a dozen and a half?

t. How many are $\frac{1}{2}$ of half a dozen?

a. How many days are there in 1 week and 5 days?

b. How many days are there in 2 weeks and 6 days?

c. How many weeks are there in 21 days?

d. How many days are there from Sunday night to Thursday night?

e. How many days are there from Monday morning to Thursday morning?

f. How many days are there from Friday night to Sunday night?

g. If 1 apple costs 2 cents, how much will 5 apples cost?

h. If 3 apples cost 12 cents, how much will 1 apple cost?

i. If I should walk 3 miles each hour, how many miles should I walk in 4 hours?

j. How many hours would it take to walk 15 miles?

k. How many quarts are there in a gallon and a half?

l. How many pints are there in half a gallon?

m. How many pints are there in a gallon and a quart?

n. How many gallons are there in 20 quarts?

o. How many inches are $\frac{1}{2}$ of 14 inches?

p. How many inches are there in one half of 2 feet?

q. How many inches are there in one half of a foot and four inches?

r. How many inches is it half way around a square that is half a foot long?

s. How many inches is it half way around an oblong that is a foot long and half a foot wide?

Problems

a. A boy had 22 cents and spent 5 cents. How many cents had he left?

b. Charles had a dozen oranges and ate 5 of them. How many had he left?

c. How many school days are there in 3 weeks?

d. How many week days are there in 2 weeks?

e. How many week days are there in 4 weeks?

f. What part of two weeks are 7 days?

g. If a man earns 12 dollars a week, how many dollars will he earn in half a week?

h. If a man earns 4 dollars in a day, how much does he earn in $\frac{1}{2}$ of a day?

i. If there are 14 children in a class, and $\frac{1}{2}$ of the children are absent, how many are present?

j. If $\frac{1}{2}$ of the children of a class are absent, and there are 10 present, how many are there in the class?

k. If a quart of milk costs 6 cents, how much will 3 pints cost?

l. How much will 3 quarts cost?

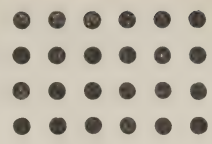
m. How much will a gallon cost?

n. If a piece of cloth a foot long costs 8 cents, what will be the cost of a piece 6 inches long?

o. What will be the cost of a piece of cloth 18 inches long?

p. If a piece of ribbon 6 inches long costs 5 cents, what will be the cost of a piece 2 feet long?

q. If we breathe 18 times in a minute, how many times do we breathe in $\frac{1}{2}$ of a minute?



a. There are — 8's in 24.

b. There are — 3's in 24.

c. 8 times — are 24.

d. 3 times — are 24.

e. There are — 6's in 24.

f. There are — 4's in 24.

g. 8 is contained in 24 — times.

h. 3 is contained in 24 — times.

i. There are — 12's in 24.

j. There are — 2's in 24.

k. 2 times 12 are —.

l. 12 times — are 24.

m. $\frac{1}{2}$ of 22 is —.

n. $\frac{1}{2}$ of 24 is —.

o. 22 divided by 2 is —.

p. 24 divided by 2 is —.

q. 7 times 3 are —.

r. 8 times 3 are —.

s. 5 times 4 are —.

t. 6 times 4 are —.

a. A man earned 3 dollars a day for a week. How many dollars did he earn?

b. John earned 8 cents a day for 3 days. How many cents did he earn?

c. If a boy earns 3 cents every day, in how many days will he earn 15 cents?

d. In how many days will he earn 24 cents?

e. If 22 firecrackers were divided equally between two boys, how many would each receive?

f. At 4 cents each how many pencils can I buy for 12 cents?

g. How many can I buy for 24 cents?

h. How much will 2 blank books cost at 8 cents each?

i. How many blank books can I buy for 24 cents, at the same price?

j. How many stamps at 2 cents each can I buy for 10 cents?

k. How many can I buy for 22 cents?

l. How many can I buy for 24 cents?

m. How much will 4 quarts of milk cost at 6 cents a quart?

n. How much will a quart and a half of milk cost at 6 cents a quart?

o. How much will two quarts and a half cost?

p. If four eggs are needed for a certain kind of cake, how many such cakes will 24 eggs make?

q. There are 7 electric lights on each street. How many lights are there on 3 streets?

r. If I divide two dozen sheets of paper equally among 3 boys, how many will each receive?

Drill Work

In adding, when there are several numbers alike, learn to add them all at once by multiplication. In *b* five 3's are 15; five 4's are 20; three 3's are 9, two 4's are 8, and the sum 17, etc.

Add:

a.	5	6	2	4	8	7	4	5
	2	1	7	5	0	5	6	5
	3	5	3	4	2	2	4	6
	8	7	7	3	9	5	6	6
	3	3	2	6	1	3	3	2
b.	3	4	3	2	5	5	4	4
	3	4	3	2	5	5	5	4
	3	4	3	4	4	5	4	0
	3	4	4	4	4	4	6	8
	3	4	4	4	4	4	6	8

c.	*d.*	*e.*	*f.*
$3 \times 5 = ?$	$4 \times 5 = ?$	$6 \times 4 = ?$	$2 \times 6 = ?$
$6 \times 2 = ?$	$7 \times 2 = ?$	$9 \times 2 = ?$	$2 \times 9 = ?$
$4 \times 3 = ?$	$5 \times 2 = ?$	$7 \times 3 = ?$	$3 \times 8 = ?$
$3 \times 6 = ?$	$3 \times 7 = ?$	$8 \times 2 = ?$	$2 \times 11 = ?$
$2 \times 8 = ?$	$4 \times 4 = ?$	$2 \times 7 = ?$	$12 \times 2 = ?$

g.	*h.*	*i.*	*j.*
$4 \times ? = 20$	$7 \times ? = 21$	$8 \times ? = 24$	$2 \times 9 = ?$
$? \times 5 = 15$	$14 \div ? = 2$	$24 \div ? = 6$	$9 \times ? = 18$
$3 \times 7 = ?$	$? \times 3 = 9$	$24 \div ? = 4$	$15 \div ? = 5$
$16 \div 4 = ?$	$12 \div ? = 4$	$12 \times ? = 24$	$4 \times ? = 20$
$20 \div ? = 10$	$? \div 2 = 6$	$24 \div ? = 8$	$20 \div ? = 5$

a. There were 12 crows in the field and 8 more flew down beside them. There were then — crows in the field.

b. Six of the crows flew away. There were — crows left.

c. There were 6 plates on the table. There were 2 knives and 2 forks at each plate. In all there were — knives and forks.

d. Mary took away 1 knife and 1 fork from each plate. There were — knives and forks left.

e. Two boys have — toes.

f. Three girls have — fingers and — thumbs.

g. Eight children have — ears.

h. Ten pigeons have — feet.

i. Six sheep have — feet.

j. There are 5 days of school in each week. In 4 weeks there are — days of school.

k. There are 3 hours of school each forenoon. In 7 forenoons there are — hours of school.

l. In 8 forenoons there are — hours of school.

m. In the afternoon there are 2 hours of school. In 10 afternoons there are — hours of school.

n. There are 8 blossoms on one pansy, 10 on another, and 5 on another. There are — blossoms in all.

o. If I should pick 8 of the blossoms, there would be — left.

p. Mabel and Lucy picked some daisies. Mabel picked 12 and Lucy picked enough more to make 19 in all. Lucy picked — daisies.

q. Mabel picked — more daisies than Lucy.

$3\overline{)14}$ — 4 and 2 over.

$4\overline{)23}$ — 5 and 3 over.

a. 3 is contained in 13 — times and — over.

b. 4 is contained in 14 — times and — over.

c. 6 is contained in 15 — times and — over.

d. 5 is contained in 18 — times and — over.

e. 8 is contained in 19 — times and — over.

f. 3 times 4 and 2 more are —.

g. 2 times 5 and 3 more are —.

h. 5 times 4 and 2 more are —.

i. 6 times 3 and 1 more are —.

j. 2 times 8 and 5 more are —.

k.	$2\overline{)5}$	$3\overline{)8}$	$3\overline{)10}$	$4\overline{)11}$	$4\overline{)13}$	$5\overline{)13}$
l.	$3\overline{)16}$	$4\overline{)15}$	$4\overline{)17}$	$5\overline{)17}$	$5\overline{)21}$	$6\overline{)20}$
m.	$2\overline{)19}$	$2\overline{)21}$	$3\overline{)13}$	$3\overline{)17}$	$4\overline{)16}$	$4\overline{)20}$
n.	$5\overline{)14}$	$5\overline{)22}$	$6\overline{)18}$	$6\overline{)17}$	$7\overline{)14}$	$7\overline{)15}$
o.	$8\overline{)16}$	$8\overline{)18}$	$9\overline{)18}$	$9\overline{)20}$	$9\overline{)23}$	$8\overline{)20}$
p.	$7\overline{)16}$	$7\overline{)21}$	$7\overline{)23}$	$8\overline{)17}$	$8\overline{)19}$	$6\overline{)24}$
q.	$5\overline{)20}$	$5\overline{)23}$	$6\overline{)21}$	$7\overline{)22}$	$8\overline{)19}$	$10\overline{)21}$
r.	$4\overline{)15}$	$5\overline{)18}$	$6\overline{)20}$	$7\overline{)21}$	$8\overline{)22}$	$9\overline{)23}$
s.	$5\overline{)14}$	$6\overline{)17}$	$7\overline{)19}$	$4\overline{)20}$	$5\overline{)23}$	$8\overline{)24}$

(page 73)

Review

Review page 64.

a. If a quart of berries is worth 8 cents, how much is a pint worth?

b. A lady picked 2 quarts and a pint of berries and sold them for 8 cents a quart. How much did she receive?

c. A milkman leaves 3 pints of milk at a house every morning. His price is 6 cents a quart. How much does the milk cost each day?

d. How many quarts are there in a gallon?

e. If a milkman has 3 gallons of milk in each can, how many quarts has he in each can?

f. How many quarts has he in a can which is half full?

g. How many pints are there in 4 quarts and a half?

h. A boy picked 4 quarts and a half of berries for 2 cents a quart. How much pay did he receive?

i. How many pints are there in a gallon?

j. If vinegar costs 24 cents a gallon, how much does a pint cost?

k. How much will 2 quarts cost?

l. How many gallons are there in 12 quarts?

m. How many gallons are there in 20 quarts?

n. How much will 8 quarts of oil cost at 10 cents a gallon?

o. How much will 12 quarts of spring water cost at 5 cents a gallon?

p. How much will 16 quarts of spring water cost at 6 cents a gallon?

Original Problems

Make problems and give the answers:

a. A man worked in a mill $\frac{1}{2}$ of the time for 2 weeks.

b. There was a vacation from Tuesday night till the next Monday morning.

c. A man bought a dozen oranges, and gave 4 of them to his children.

d. He bought 2 dozen lemons and sold $\frac{1}{2}$ of them.

e. I bought a dozen pencils at 2 cents each.

f. I spent $\frac{1}{2}$ of my money and had 7 dollars left.

g. A boy bought a top for 5 cents, and a ball for 5 cents, and had as much money left as he had spent.

h. George is 5 feet tall and his father is 5 feet and a half tall.

i. Belle's book is 7 inches long and 4 inches wide.

j. She has another book which is 6 inches long and 4 inches wide.

k. A boy picked 12 quarts of berries in the forenoon and 8 quarts in the afternoon.

l. A milkman has cans which hold 4 gallons. One can is full and another half full.

m. A jay lays 5 eggs.

n. There were 20 sparrows in a tree and 7 of them flew away.

o. There are five hours of school each day.

p. Two quarts of berries are worth 12 cents.

q. Oil costs 8 cents a gallon.

r. Peanuts cost 3 cents a pint.

Factors of 25 and 27

a. Two 10's and — are 25.

b. There are — 5's in 25.

c. Five is contained in 25 — times.

d. Ten is contained in 25 — times and — over.

e. $\frac{1}{2}$ of 10 is —.

f. $\frac{1}{2}$ of 20 is —.

g. There are — 3's in 9.

h. There are — 9's in 27.

i. There are — 3's in 27.

j. Three is contained in 27 — times.

k. Nine is contained in 27 — times.

l. Six is contained in 27 — times and — over.

m. There are — 2's in 20.

n. There are — 2's in 24.

o. There are — 2's in 26.

p. Two is contained in 26 — times.

q. Thirteen is contained in 26 — times.

r. Six is contained in 26 — times and — over.

Name the months of the year in their order.

a. How many months are there in a year?

b. How many months are there in half a year?

c. Which month finishes the first half of the year?

d. How many months are there from the beginning of the year to the end of the month of March?

e. How many months are there from the first of the year to the first of May?

f. How many months are there from the beginning of April to the end of July?

g. How many months are there from the beginning of August to the middle of September?

h. How many months are there from the middle of November to the end of the year?

i. How many months are there from the beginning of December to the end of January of the next year?

j. How many months are there from the beginning of July to the end of the year?

k. How many months are there from the end of September to the beginning of April of the next year?

l. Which month is 4 months later than March?

m. Which month is 7 months later than May?

n. Which month is 5 months later than November?

o. Which month is 8 months later than September?

p. Which month is 5 months later than December?

q. Which month is 3 months earlier than May?

r. Which month is 5 months earlier than November?

Tens and Ones

See pages 35 and 53.

1. Write one ten and no ones.
2. Write one ten and five ones.
3. Write two tens and eight ones.
4. Write five tens and no ones.
5. Read the numbers 27, 14, 40, 58.
6. Read the numbers 61, 70, 82, 99.
7. Add two tens and three tens.
8. Add two tens and seven ones.
9. Add three tens, one ten, and five ones.
10. Add two tens, five ones, and three ones.
11. Add three tens, two ones, one ten, and six ones.
12. Add fourteen ones and six ones.
13. Add six ones and eleven ones.
14. Add sixteen ones and five ones.
15. Add one ten, two ones, and five ones.
16. From twelve ones take four ones.
17. From one ten take three ones.
18. From two tens take five ones.
19. Nine and five are — ten and — ones.
20. Fifteen and six are — tens and — ones.
21. Twenty and ten are — tens.
22. Twenty and twelve are — tens and — ones.
23. Twenty-five less five are — tens.
24. Twenty less five are — tens and — ones.

To add or subtract large numbers we add or subtract the ones and the tens separately.

1. Add 22 and 14.

$$\begin{array}{r} 22 \\ 14 \\ \hline 36 \end{array}$$

4 ones and 2 ones are 6 ones. 1 ten and 2 tens are 3 tens. The answer is 3 tens and 6 ones, or thirty-six.

2. Add 24 and 26.

$$\begin{array}{r} 24 \\ 26 \\ \hline 10 \\ 4 \\ \hline 50 \end{array}$$

6 ones and 4 ones are 10 ones, which make 1 ten. 2 tens and 2 tens are 4 tens. 4 tens and 1 ten are 5 tens, or fifty.

At first write the two parts of the answer separately and add them. After a time it will be easy to combine them mentally.

3. Subtract 13 from 48.

$$\begin{array}{r} 48 \\ 13 \\ \hline 35 \end{array}$$

3 ones from 8 ones leaves 5 ones. 1 ten from 4 tens leaves 3 tens. The answer is thirty-five.

First copy the examples and write the answers. Afterwards go over them repeatedly, giving the results orally.

Add:

4.	**5.**	**6.**	**7.**	**8.**	**9.**
10	10	5	10	10	8
1	3	10	9	10	10
10.	**11.**	**12.**	**13.**	**14.**	**15.**
10	10	30	20	10	25
10	20	10	20	15	20

Subtract:

16.	**17.**	**18.**	**19.**	**20.**	**21.**
25	29	36	28	39	37
4	9	14	14	4	7
22.	**23.**	**24.**	**25.**	**26.**	**27.**
30	40	35	25	42	50
20	20	15	15	22	40

Problems

Solve these problems with the pencil.

1. A man rode 20 miles by train and 15 miles with a team. How many miles did he ride?

2. He then walked 25 miles. How many more miles did he ride than he walked?

3. How many miles did he travel in all?

4. There are 12 pegs in one box and enough more in another box to make 48 in all. How many are there in the second box?

5. How many more pegs are there in the second box than in the first?

6. Carl is 18 years old and his father is 25 years older than he. How old is his father?

7. In how many years will Carl be 39 years old?

8. A man bought a cow for 35 dollars and sold her for 14 dollars more than he paid. How much did he receive?

9. He bought a horse for 42 dollars and sold him for 59 dollars. How much more did he receive than he gave?

10. John has 16 cents, Mary has 12 cents, and Margaret has 20 cents. How many more cents has Margaret than Mary?

11. John and Mary together have how many more cents than Margaret has?

12. How many cents have they all?

13. How many cents would they have left, if they should spend 28 cents?

14. How many cents would they have left if they should spend 28 cents and 9 cents?

Multiplication

Say "two, four, six," etc.

1. Count by 2's to twenty.
2. Add 2's from twenty to thirty.
3. Add 2's from thirty to forty.
4. Count by 3's to eighteen.
5. Add 3's from eighteen to thirty.
6. Count by 4's to twenty.

7. Subtract 2's from twelve to zero.
8. Subtract 2's from twenty to ten.
9. Subtract 3's from twelve to zero.
10. Subtract 3's from eighteen to nine.
11. Subtract 4's from twelve to zero.
12. Subtract 5's from twenty to zero.

13. Add by 5's to twenty.
14. Add 5's from twenty to forty.
15. Subtract 5's from forty to twenty.
16. Count by 10's to fifty.
17. Subtract 5's from fifty to twenty.
18. Subtract 10's from fifty to zero.

19. Count by 6's to twenty-four.
20. Count by 7's to twenty-eight.
21. Count by 8's to twenty-four.
22. Count by 9's to twenty-seven.
23. Subtract 6's from twenty-four.
24. Subtract 7's from twenty-eight.

Drill Table

Drill thoroughly upon these examples till the answers can be given instantly.

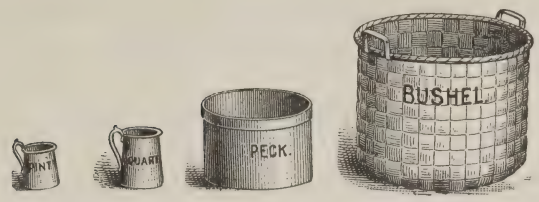
1.	2.	3.	4.
$5 \times 2 = ?$	$2 \times 3 = ?$	$8 \times 3 = ?$	$2 \times 4 = ?$
$7 \times 2 = ?$	$3 \times 3 = ?$	$7 \times 3 = ?$	$3 \times 4 = ?$
$8 \times 2 = ?$	$4 \times 3 = ?$	$9 \times 3 = ?$	$5 \times 4 = ?$
$6 \times 2 = ?$	$6 \times 3 = ?$	$5 \times 3 = ?$	$4 \times 4 = ?$
$9 \times 2 = ?$	$5 \times 3 = ?$	$3 \times 3 = ?$	$6 \times 4 = ?$

5.	6.	7.	8.
$2 \times 5 = ?$	$7 \times 5 = ?$	$2 \times 6 = ?$	$7 \times 6 = ?$
$3 \times 5 = ?$	$9 \times 5 = ?$	$3 \times 6 = ?$	$4 \times 6 = ?$
$4 \times 5 = ?$	$6 \times 5 = ?$	$4 \times 6 = ?$	$8 \times 6 = ?$
$6 \times 5 = ?$	$8 \times 5 = ?$	$6 \times 6 = ?$	$9 \times 6 = ?$
$5 \times 5 = ?$	$4 \times 5 = ?$	$5 \times 6 = ?$	$6 \times 6 = ?$

9.	10.	11.	12.
$4 \times 2 = ?$	$7 \times 4 = ?$	$5 \times 2 = ?$	$8 \times 4 = ?$
$8 \times 2 = ?$	$4 \times 5 = ?$	$9 \times 2 = ?$	$3 \times 5 = ?$
$5 \times 3 = ?$	$8 \times 5 = ?$	$6 \times 3 = ?$	$6 \times 5 = ?$
$7 \times 3 = ?$	$3 \times 6 = ?$	$8 \times 3 = ?$	$4 \times 6 = ?$
$4 \times 4 = ?$	$8 \times 6 = ?$	$5 \times 4 = ?$	$7 \times 6 = ?$

13.	14.	15.	16.
$6 \times 2 = ?$	$2 \times 5 = ?$	$9 \times 6 = ?$	$8 \times 2 = ?$
$4 \times 3 = ?$	$5 \times 5 = ?$	$6 \times 6 = ?$	$5 \times 4 = ?$
$9 \times 3 = ?$	$9 \times 5 = ?$	$7 \times 4 = ?$	$6 \times 5 = ?$
$6 \times 4 = ?$	$2 \times 6 = ?$	$8 \times 5 = ?$	$8 \times 6 = ?$
$9 \times 4 = ?$	$5 \times 6 = ?$	$7 \times 3 = ?$	$7 \times 5 = ?$

Pints — Quarts — Pecks — Bushels



1. In a quart there are — pints.
2. In a peck there are — quarts.
3. In a bushel there are — pecks.
4. In a peck there are — pints.
5. In a bushel there are — quarts.
6. In 2 quarts there are — pints.
7. In 2 quarts and 1 pint there are — pints.
8. In 2 pecks there are — quarts.
9. In 2 pecks and 1 quart there are — quarts.
10. In 2 pecks and 5 quarts there are — quarts.
11. How many pints are there in half a quart?
12. How many quarts are there in half a peck?
13. How many quarts are 1 peck less 1 quart?
14. How many quarts are 1 peck less 4 quarts?
15. How many quarts are 1 peck less 6 quarts?
16. How many quarts are 3 pints and 1 pint?
17. How many quarts and how many pints are 3 pints and 2 pints?
18. How many pecks and how many quarts are 5 quarts and 4 quarts?

Problems

1. Charles picked 7 quarts of berries and Mary picked 4 quarts. How many quarts more than a peck did they both pick?

2. How many quarts more than half a peck did Charles pick?

3. How many more quarts would both together have to pick to make a peck and a half?

4. A man had a peck of berries and sold 3 quarts. How many quarts had he left?

5. Another man had a peck of berries and sold 2 quarts at each house. At how many houses did he sell them?

6. How much does a pint of peanuts cost, if a quart costs 8 cents?

7. How much will 3 pints of peanuts cost at 6 cents a quart?

8. How many 2's are there in 8?

9. How many times are 2 quarts contained in a peck?

10. How many times are 2 quarts contained in half a peck?

11. If a peck of apples is worth 16 cents, how much is half a peck worth?

12. How much are 2 quarts worth?

13. How much is 1 quart worth?

14. How much are 6 quarts worth?

15. How many pints are there in a peck?

16. How many pints are there in half a peck?

17. How many pints are there in a peck and a half?

Original Problems

Make problems and give the answers:

1. A man had 16 horses.

2. Another man had 15 horses.

3. I have 15 cents in five-cent pieces.

4. I have a ten-cent piece and some five-cent pieces. In all I have 20 cents.

5. I have a five-cent piece and some ten-cent pieces. In all I have 25 cents.

6. A boy bought 5 two-cent stamps and had 1 cent left.

7. Another boy bought 3 five-cent stamps and had 2 cents left.

8. Clara was ill from the first of March to the last of July.

9. I was away from home from the middle of August to the end of October.

10. Vacation began the middle of June and ended the middle of September.

11. The first term lasts from the middle of September to the first of the next February.

12. John has 7 quarts of berries and Samuel has 6 quarts.

13. A man had a peck of apples and sold 4 quarts of them.

14. Another man had 10 quarts and bought 6 quarts more.

15. I bought at the store 4 pounds of meat at 6 cents a pound.

16. I bought 3 boxes of strawberries for 27 cents.

In multiplying or dividing large numbers we multiply or divide the ones and the tens separately.

1. Multiply 13 by 2.

$$\begin{array}{r} 13 \\ \times\ 2 \\ \hline 26 \end{array}$$

2 times 3 ones are 6 ones. 2 times 1 ten are 2 tens. The answer is 26.

2. Divide 63 by 3.

$3\overline{)63}$
21

3 is contained in 6 tens 2 tens times, and in 3 ones once. The answer is 21.

Multiply:

3.	**4.**	**5.**	**6.**	**7.**	**8.**
3	5	4	6	5	6
7	4	8	4	5	5
9.	**10.**	**11.**	**12.**	**13.**	**14.**
10	20	10	12	21	24
2	2	4	2	3	2
15.	**16.**	**17.**	**18.**	**19.**	**20.**
11	22	31	33	12	23
3	2	3	2	4	2
21.	**22.**	**23.**	**24.**	**25.**	**26.**
14	11	13	12	10	10
2	5	3	3	3	5

Divide:

27.	**28.**	**29.**	**30.**	**31.**	**32.**
$2\overline{)10}$	$2\overline{)12}$	$3\overline{)9}$	$3\overline{)15}$	$4\overline{)8}$	$5\overline{)10}$
33.	**34.**	**35.**	**36.**	**37.**	**38.**
$2\overline{)24}$	$2\overline{)28}$	$3\overline{)30}$	$3\overline{)33}$	$4\overline{)40}$	$5\overline{)50}$

1. How many quarts are there in 2 gallons?

2. How many quarts are there in 5 gallons?

3. How many gallons are there in 8 quarts?

4. How many gallons are there in 20 quarts?

5. How many gallons are there in 28 quarts?

6. How many inches are there in 2 feet?

7. How many inches are there in 4 feet?

8. How many times are 2 inches contained in 12 inches?

9. How many times are 2 inches contained in 2 feet?

10. How many times are 3 inches contained in 3 feet?

11. How many blocks 4 inches long must I lay down to make a row of blocks 4 feet long?

12. If a pound of meat costs 13 cents, how much will 2 pounds cost?

13. If 2 yards of cloth cost 28 cents, how much will 1 yard cost?

14. At 12 cents a box how much will 3 boxes of berries cost?

15. How many days are there in 4 weeks?

16. How many days are there in 5 weeks and 5 days?

17. How much will 4 melons cost at 11 cents each?

18. At 2 cents each how many oranges can I buy for 42 cents?

19. If melons cost 5 cents each, how many melons can I buy for 45 cents?

20. How much would 6 melons cost?

Problems

1. There are — in half a dozen.

2. There are — in a dozen and a half.

3. A hen sat upon 14 eggs. Half a dozen eggs did not hatch. She hatched — chickens.

4. In 16 days there are — weeks and — days over.

5. In 25 days there are — weeks and — days.

6. In 3 weeks and 4 days there are — days.

7. In 4 weeks and 2 days there are — days.

8. In 15 months there is one year and there are — months over.

9. In a year and a half there are — months.

10. In two years and a half there are — months.

11. If the side of a square is 3 inches long, it is — inches around the square.

12. If it is 20 inches around a square, one side of the square is — inches.

13. If an oblong is 2 inches wide and 8 inches long, it is — inches around the oblong.

14. If it is 16 inches around an oblong, it is — inches half way around it.

15. If it is 10 inches half way around an oblong and the width is 3 inches, the length must be — inches.

16. A man paid 15 dollars for a suit of clothes and sold it for 22 dollars. He gained — dollars.

17. A boy walked 4 miles an hour for 9 hours. In all he walked — miles.

18. A lily of the valley has 16 flowers in one cluster and 15 in another cluster. In both clusters there are — flowers.

1. Add 29 and 38.

29
38
17
5
67

8 ones and 9 ones are 17 ones, or 1 ten and 7 ones. 3 tens and 2 tens are 5 tens. 1 ten and 7 ones, and 5 tens are 6 tens and 7 ones, or sixty-seven.

Add:

2.	**3.**	**4.**	**5.**	**6.**	**7.**
34	26	34	12	18	18
3	4	16	9	4	24
8.	**9.**	**10.**	**11.**	**12.**	**13.**
22	22	26	26	35	35
32	18	6	26	5	15
14.	**15.**	**16.**	**17.**	**18.**	**19.**
20	28	25	27	19	21
30	32	25	17	19	19
20.	**21.**	**22.**	**23.**	**24.**	**25.**
37	49	40	24	34	44
20	8	19	28	25	19
26.	**27.**	**28.**	**29.**	**30.**	**31.**
15	10	21	16	31	26
10	9	12	24	4	12
23	12	15	5	16	10
16	21	8	14	7	8
32.	**33.**	**34.**	**35.**	**36.**	**37.**
40	21	32	8	15	20
8	5	12	12	25	15
18	16	8	6	5	10
4	9	8	31	15	5

Review

1. Find the sum of 35 and 24.
2. Find the sum of 28 and 32.
3. Find the sum of 12 and 17.
4. Find the sum of 18 and 22.
5. Find the sum of 24 and 28.
6. Find the sum of 35 and 18.

7. How many are 12, 21, 10, and 24?
8. How many are 8, 15, 20, and 31?
9. How many are 13, 10, 15, and 11?
10. How many are 11, 23, 35, and 15?
11. How many are 24, 12, 16, and 13?
12. How many are 10, 19, 28, and 20?

13. Find the sum of 38 and 15.
14. Find the difference between 38 and 15.
15. Find the sum of 45 and 24.
16. Find the difference between 45 and 24.
17. Find the difference between 59 and 33.
18. Find the difference between 60 and 30.

19. The sum of 24, 32, and 13 is —.
20. The sum of 27, 25, and 12 is —.
21. The difference between 48 and 24 is —.
22. The difference between 65 and 15 is —.
23. The sum of 18, 14, and 16 is —.
24. The difference between 48 and 18 is —.

Subtraction

1. Subtract 4 from 32.

Since 4 ones are greater than 2 ones they cannot be taken from them. We take 1 ten from the 3 tens. This 1 ten is the same as 10 ones, which with the 2 ones make 12 ones. 4 ones from 12 ones leaves 8 ones. There are 2 tens also remaining. The answer is twenty-eight.

32
4
28

2. Subtract 15 from 34.

5 is greater than 4. From the 3 tens we take 1 ten or 10 ones, which with the 4 ones make 14 ones. 5 ones from 14 ones leaves 9 ones. 1 ten from the tens which remain leaves 1 ten. The answer is nineteen.

34
15
19

Subtract:

3.	**4.**	**5.**	**6.**	**7.**	**8.**
9	10	12	15	15	20
2	4	8	5	10	10
9.	**10.**	**11.**	**12.**	**13.**	**14.**
24	35	38	53	49	60
13	21	24	31	22	30
15.	**16.**	**17.**	**18.**	**19.**	**20.**
21	22	24	32	38	25
2	4	6	5	7	7
21.	**22.**	**23.**	**24.**	**25.**	**26.**
20	30	32	41	50	52
2	5	8	9	10	9
27.	**28.**	**29.**	**30.**	**31.**	**32.**
46	32	32	43	43	50
23	8	18	12	14	5
33.	**34.**	**35.**	**36.**	**37.**	**38.**
40	43	43	43	45	45
20	20	8	18	25	39

Review

1. How many gallons are there in 8 quarts?

2. How many gallons are there in 10 quarts?

3. How many pints are there in 2 quarts and 1 pint?

4. How many quarts are there in 3 gallons and 2 quarts?

5. How many quarts are there in $2\frac{1}{2}$ gallons?

6. How many times is 1 pint contained in 3 quarts?

7. How many times are 2 quarts contained in 2 gallons?

8. How many inches are there in $1\frac{1}{2}$ feet?

9. How many inches are there in 2 feet 4 inches?

10. How many times are 4 inches contained in 2 feet?

11. How many times are 6 inches contained in 4 feet?

12. How many eggs are $2\frac{1}{2}$ dozen eggs?

13. How many eggs are $3\frac{1}{2}$ dozen eggs?

14. John found 8 eggs in one nest, 10 in another, and 6 in another. How many dozen eggs did he find?

15. How many weeks and days are there in 18 days?

16. How many days are there in 4 weeks and 5 days?

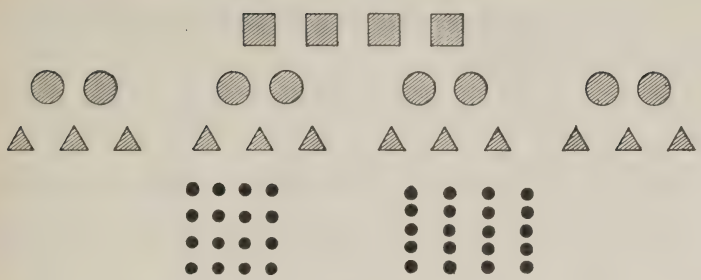
17. If it is 32 inches around a square, how long is one side of the square?

18. $\frac{1}{2}$ of the side of a square is 6 inches. How far is it around the square?

19. If it is 9 inches half way around an oblong and its width is 4 inches, what is its length?

20. How far is it around the oblong?

One Fourth



$\frac{1}{2}$ means one half. $\frac{1}{4}$ means one fourth. $\frac{3}{4}$ means three fourths.

1. One fourth of 4 is —.
2. One fourth of 8 is —.
3. One fourth of 12 is —.
4. One fourth of 16 is —.
5. One fourth of 20 is —.

6. One fourth of 8 is —.
7. Three fourths of 8 is —.
8. One half of 8 is —.
9. One half of 8 and one fourth of 8 are —.
10. One half of 8 less one fourth of 8 is —.

11. $\frac{1}{2}$ of 12 is —.
12. $\frac{1}{4}$ of 12 is —.
13. $\frac{1}{2}$ of 12 and $\frac{1}{4}$ of 12 are —.
14. $\frac{1}{2}$ of 12 less $\frac{1}{4}$ of 12 is —.

15. $\frac{1}{2}$ of 16 is —.
16. $\frac{1}{4}$ of 16 is —.
17. $\frac{3}{4}$ of 16 is —.
18. $\frac{3}{4}$ of 20 is —.

Review

1. Carrie had 8 peaches and gave her sister $\frac{1}{4}$ of them. How many had she left?

2. One fourth of my money is 6 cents. How much money have I?

3. If $\frac{1}{2}$ of my money is 10 cents, how much money have I?

4. If $\frac{1}{4}$ of my money is 6 cents, how much is $\frac{1}{2}$ of my money?

5. If $\frac{1}{2}$ of my money is 8 dollars, how much is $\frac{1}{4}$ of my money?

6. How much is $\frac{3}{4}$ of my money?

7. How many quarts are there in half a peck?

8. How many quarts are there in $\frac{1}{4}$ of a peck?

9. How many quarts are there in $\frac{1}{4}$ of a gallon?

10. How many pints are there in $\frac{1}{4}$ of a gallon?

11. How many pints are there in a peck?

12. How many pints are there in $\frac{1}{4}$ of a peck?

13. $\frac{1}{4}$ of a foot is how many inches?

14. $\frac{3}{4}$ of a foot is how many inches?

15. How many inches are $\frac{1}{2}$ of a foot and $\frac{1}{4}$ of a foot?

16. How many inches are $\frac{3}{4}$ of a foot less $\frac{1}{4}$ of a foot?

17. If it is 16 inches around a square, how far is it $\frac{1}{4}$ of the way around the square?

18. It is 36 inches around a square. What is the length of the square?

19. There are 20 children on 4 settees with the same number on each. How many are there on one settee?

Addition and Subtraction

See the explanations on pages 79, 89, and 91.

Add:

1.	2.	3.	4.	5.	6.
8	5	5	4	8	9
7	8	5	6	2	9
5	0	8	3	4	6
6	9	2	7	9	6
7	6	5	5	9	6

7.	8.	9.	10.	11.	12.
10	21	25	13	11	24
12	15	15	24	16	14
23	25	8	16	9	8
12	7	15	12	22	12
11	11	3	5	8	15

Subtract:

13.	14.	15.	16.	17.	18.
9	10	13	15	18	18
5	4	8	7	8	9

19.	20.	21.	22.	23.	24.
25	24	24	44	45	38
13	8	18	28	20	21

25.	26.	27.	28.	29.	30.
42	32	38	42	61	65
9	16	18	17	39	45

31.	32.	33.	34.	35.	36.
30	40	60	38	46	64
9	18	45	18	19	38

The Clock

I = 1	VII = 7
II = 2	VIII = 8
III = 3	IX = 9
IIII or IV = 4	X = 10
V = 5	XI = 11
VI = 6	XII = 12

The figures on the clock are called Roman figures. Learn to make the Roman figures for the numbers from one to twelve.

1. What time is it when both the long pointer and the short pointer of the clock are at XII?

2. What time is it when the long pointer is at XII and the short pointer is at III?

3. When the short hand is between XII and I and the long hand is at III, what time is it?

4. What time is it when the short hand is between II and III and the long hand is at VI?

5. What time is it when the short hand is between V and VI and the long hand is at IX?

6. When the short hand is at VIII and the long hand is at XII it is — o'clock.

7. When the short hand is between X and XI and the long hand is at VI it is —.

8. When the short hand is between III and IIII and the long hand is at II it is —.

Original Problems

Make problems and give the answers:

1. A boy bought half a dozen oranges.

2. A man bought 3 dozen lemons.

3. There are 3 weeks and 2 days left in this month.

4. The side of a square is 4 inches long.

5. An oblong is 8 inches long and it is 11 inches half way around it.

6. The length of a room is 12 feet and its width is 8 feet.

7. A man walked 15 miles in 5 hours.

8. There are 15 boys in the school and 21 girls.

9. There are 35 sheep in one pasture and 10 less sheep in another pasture.

10. There are 8 rows of desks in a schoolroom and 7 desks in each row.

11. $\frac{1}{2}$ of my money is 10 dollars.

12. William lost $\frac{1}{2}$ of his marbles and had 9 marbles left.

13. A boy gave away 5 marbles, and these were $\frac{1}{4}$ of all he had.

14. A milkman had 2 gallons of milk in a can and sold 2 quarts to one man and 2 quarts to another.

15. A milkman had 8 gallons of milk and sold 2 quarts to each customer.

16. Jennie came into the schoolroom when the short hand of the clock was between IX and X and the long hand was at V.

17. She went home when the long hand was at III and the short hand was between XII and I.

Reckoning Time

1. In an hour there are — minutes.

2. In $\frac{1}{2}$ of an hour there are — minutes.

3. In $\frac{1}{4}$ of an hour there are — minutes.

4. In $\frac{3}{4}$ of an hour there are — minutes.

5. From nine o'clock to half past nine it is — minutes.

6. From nine o'clock to quarter of ten it is — minutes.

7. From quarter of ten to ten o'clock it is — minutes.

8. In 60 minutes there are — times 10 minutes.

9. In half an hour there are — times 10 minutes.

10. In half an hour there are — times 5 minutes.

11. In an hour there are — times 5 minutes.

12. In 10 minutes after quarter past 4 it will be —.

13. In 5 minutes after half past 4 it will be —.

14. In 10 minutes after quarter of eight it will be —.

15. In 15 minutes after 5 minutes of eight it will be —.

16. In 30 minutes after 10 minutes of 8 it will be —.

17. Half an hour ago it was 10 minutes past 9. It is now —.

18. An hour and a half ago it was 15 minutes past 3. It is now —.

19. It is now a quarter of 6. In an hour and a quarter it will be —.

20. Forty minutes ago it was 10 minutes past 11. It is now —.

21. In 35 minutes it will be 9 o'clock. It is now —.

Drill Table

Drill thoroughly till the answers can be given without hesitation.

1.	2.	3.	4.
$6 \times 3 = ?$	$6 \times 4 = ?$	$6 \times ? = 18$	$21 \div 3 = ?$
$7 \times 3 = ?$	$8 \times 4 = ?$	$8 \times ? = 32$	$32 \times 4 = ?$
$9 \times 3 = ?$	$7 \times 4 = ?$	$7 \times ? = 21$	$30 \div ? = 10$
$8 \times 3 = ?$	$10 \times 4 = ?$	$9 \times ? = 36$	$40 \div 4 = ?$
$10 \times 3 = ?$	$9 \times 4 = ?$	$10 \times ? = 30$	$32 \div ? = 8$

5.	6.	7.	8.
$6 \times 5 = ?$	$6 \times 6 = ?$	$6 \times ? = 36$	$30 \div 5 = ?$
$8 \times 5 = ?$	$7 \times 6 = ?$	$7 \times ? = 35$	$48 \div 6 = ?$
$9 \times 5 = ?$	$9 \times 6 = ?$	$42 \div 6 = ?$	$54 \div ? = 9$
$7 \times 5 = ?$	$8 \times 6 = ?$	$40 \div 5 = ?$	$35 \div ? = 7$
$10 \times 5 = ?$	$10 \times 6 = ?$	$50 \div ? = 10$	$60 \div ? = 10$

9.	10.	11.	12.
$2 \times 7 = ?$	$21 \div 7 = ?$	$7 \times 7 = ?$	$49 \div 7 = ?$
$3 \times 7 = ?$	$35 \div 7 = ?$	$8 \times 7 = ?$	$56 \div ? = 8$
$5 \times 7 = ?$	$28 \div 7 = ?$	$9 \times 7 = ?$	$42 \div 7 = ?$
$4 \times 7 = ?$	$42 \div 7 = ?$	$6 \times 7 = ?$	$35 \div 7 = ?$
$6 \times 7 = ?$	$14 \div 7 = ?$	$5 \times 7 = ?$	$63 \div ? = 9$

13.	14.	15.	16.
$7 \times 3 = ?$	$9 \times 4 = ?$	$24 \div 6 = ?$	$20 \div 4 = ?$
$3 \times 7 = ?$	$9 \times 5 = ?$	$24 \div 4 = ?$	$30 \div 5 = ?$
$8 \times 4 = ?$	$7 \times 6 = ?$	$36 \div ? = 6$	$18 \div ? = 3$
$7 \times 5 = ?$	$5 \times 6 = ?$	$42 \div ? = 7$	$56 \div ? = 8$
$4 \times 8 = ?$	$6 \times 7 = ?$	$40 \div 5 = ?$	$35 \div 7 = ?$

Multiplication and Division

Fill the blanks with numbers. $2 \times 6 = 12$. First write the examples. Then recite them orally several times in review.

1. $__ \times __ = 12$
2. $__ \times __ = 14$
3. $__ \times __ = 15$
4. $__ \times __ = 16$
5. $__ \times __ = 18$
6. $__ \times __ = 20$
7. $__ \times __ = 21$
8. $__ \times __ = 24$
9. $__ \times __ = 25$
10. $__ \times __ = 27$
11. $__ \times __ = 28$
12. $__ \times __ = 30$
13. $__ \times __ = 32$
14. $__ \times __ = 35$
15. $__ \times __ = 36$
16. $__ \times __ = 40$
17. $__ \times __ = 42$
18. $__ \times __ = 45$
19. $__ \times __ = 48$
20. $__ \times __ = 49$
21. $__ \times __ = 50$
22. $__ \times __ = 54$
23. $__ \times __ = 56$
24. $__ \times __ = 60$
25. $12 \div __ = 6$
26. $15 \div __ = 5$
27. $18 \div __ = 3$
28. $24 \div __ = 4$
29. $25 \div __ = 5$
30. $30 \div __ = 6$
31. $32 \div __ = 8$
32. $35 \div __ = 7$
33. $40 \div __ = 10$
34. $45 \div __ = 9$
35. $49 \div __ = 7$
36. $60 \div __ = 10$
37. $__ \div 4 = 3$
38. $__ \div 5 = 4$
39. $__ \div 4 = 6$
40. $__ \div 3 = 6$
41. $__ \div 6 = 5$
42. $__ \div 4 = 7$
43. $__ \div 5 = 7$
44. $__ \div 6 = 6$
45. $__ \div 7 = 3$
46. $__ \div 7 = 5$
47. $__ \div 6 = 7$
48. $__ \div 7 = 8$

Problems

1. How much will 4 tons of coal cost at 5 dollars a ton?

2. If 3 quarts of berries cost 18 cents, what is the price for one quart?

3. If 2 pills cost 4 cents, how much will one pill cost?

4. If 2 pills cost 4 cents, how much will 5 pills cost?

5. If 2 quarts of cherries cost 12 cents, how much will 3 quarts cost?

6. If 3 barrels of flour cost 15 dollars, how many dollars will one barrel cost?

7. If 3 barrels of flour cost 15 dollars, how much will 2 barrels cost?

8. If 3 quarts of nuts cost 12 cents, how much will one quart cost?

9. If 2 quarts of nuts cost 8 cents, how much will 5 quarts cost?

10. If milk costs 5 cents a quart, how many quarts can be bought for 18 cents?

11. If milk costs 6 cents a quart, how many quarts can be bought for 24 cents?

12. If a man earns 2 dollars a day, in how many days will he earn 8 dollars?

13. How many dollars will he earn in 9 days?

14. If a man earns 12 dollars in 4 days, how many dollars will he earn in 2 days?

15. If a rose has 5 petals, how many petals have 7 roses?

16. If there are 7 children in each row, how many children are there in 8 rows?

Halves and Fourths

1. One half of 24 is —.
2. One fourth of 24 is —.
3. One fourth of 28 is —.
4. One half of 24 and one fourth of 24 are —.
5. One half of 28 and one fourth of 28 are —.
6. One half of 28 less one fourth of 28 is —.
7. $\frac{1}{2}$ of 26 is —.
8. $\frac{1}{2}$ of 26 less $\frac{1}{2}$ of 24 is —.
9. $\frac{1}{4}$ of 32 is —.
10. $\frac{1}{4}$ of 32 less $\frac{1}{4}$ of 24 is —.
11. $\frac{1}{4}$ of 32 less $\frac{1}{4}$ of 28 is —.
12. $\frac{1}{2}$ of 40 and $\frac{1}{4}$ of 40 are —.
13. Arthur had 12 peaches and ate $\frac{1}{4}$ of them. How many had he left?
14. Margaret had 20 cents and spent $\frac{1}{4}$ of them. How many cents did she spend?
15. How many quarts are there in half a peck?
16. How many quarts are there in half a bushel?
17. How many quarts are there in $\frac{1}{4}$ of a bushel?
18. How many quarts are there in $\frac{1}{4}$ of a peck?
19. How many quarts are there in $\frac{3}{4}$ of a peck?
20. How many quarts are there in $\frac{3}{4}$ of a bushel?
21. How many quarts are there in $\frac{1}{2}$ of a peck and $\frac{1}{4}$ of a peck?
22. How many quarts are there in $\frac{1}{2}$ of a bushel and $\frac{1}{4}$ of a bushel?

1. Multiply 16 by 4.

$$\begin{array}{r} 16 \\ \times\ 4 \\ \hline 24 \\ 4 \\ \hline 64 \end{array}$$

4 times 6 ones are 24 ones, or 2 tens and 4 ones. 4 times 1 ten are 4 tens. 2 tens, 4 ones, and 4 tens are 6 tens and 4 ones, or sixty-four. Keep the parts of the answer separate at first. After a time combine them mentally, and write them but once.

2. Divide 52 by 2.

$$2\overline{)52}$$
$$26$$

2 is contained in 5 tens 2 tens times, and there is one ten over. This 1 ten equals 10 ones, which with the 2 ones make 12 ones. 2 is contained in 12 ones 6 times. The answer is 26.

Multiply:

3.	4.	5.	6.	7.	8.
23	20	25	13	20	25
2	2	2	3	3	3
9.	**10.**	**11.**	**12.**	**13.**	**14.**
10	14	15	10	13	14
4	4	4	5	5	5
15.	**16.**	**17.**	**18.**	**19.**	**20.**
10	14	13	10	11	14
6	6	6	7	7	7

Divide:

21.	22.	23.	24.	25.
$3\overline{)36}$	$2\overline{)32}$	$2\overline{)54}$	$3\overline{)42}$	$3\overline{)45}$
26.	**27.**	**28.**	**29.**	**30.**
$4\overline{)56}$	$4\overline{)60}$	$5\overline{)15}$	$5\overline{)50}$	$5\overline{)65}$
31.	**32.**	**33.**	**34.**	**35.**
$6\overline{)36}$	$6\overline{)72}$	$6\overline{)78}$	$7\overline{)70}$	$7\overline{)84}$

(page 103)

Problems

1. If a peck of potatoes costs 25 cents, how much will 2 pecks cost?

2. If a peck of apples costs 18 cents, how much will 3 pecks cost?

3. A man bought 4 pineapples for 13 cents each. How much did they cost?

4. How much would 6 pineapples cost?

5. If a man earns 16 dollars a week, how much will he earn in 4 weeks?

6. How much will he earn in 6 weeks?

7. A farmer has 6 flocks of sheep, with 14 sheep in each flock. How many sheep has he?

8. How many sheep would he have left, if he should sell 20 sheep?

9. How many sheep would he have, if he should sell 20 and should then buy 10 more?

10. There are 5 classes of children and 15 in each class. How many children are there in all?

11. How many would there be, if 12 children were absent?

12. How many days are there in 12 weeks?

13. How many days are there in 12 weeks and 5 days?

14. How many days are there in 11 weeks less 3 days?

15. A wild rose has 5 petals. How many petals have 15 wild roses?

16. If it costs 25 cents to send 10 words by telegraph, and 2 cents extra for each word over 10, how much will it cost to send 12 words?

17. How much will it cost to send 15 words?

Addition and Subtraction

See pages 89 and 91.

Add:

1.	2.	3.	4.	5.	6.
23	15	31	18	32	24
42	21	16	22	25	15
13	32	23	12	14	36

7.	8.	9.	10.	11.	12.
42	19	27	30	28	45
25	26	29	45	8	8
16	25	16	15	14	7

13.	14.	15.	16.	17.	18.
16	45	19	25	15	20
26	20	9	25	15	20
30	25	26	20	15	20

19.	20.	21.	22.	23.	24.
18	16	15	23	36	40
18	16	16	24	36	30
14	16	17	25	27	25

Subtract:

25.	26.	27.	28.	29.	30.
48	40	42	55	54	76
23	18	26	25	25	38

31.	32.	33.	34.	35.	36.
50	50	62	67	63	75
20	25	38	56	27	25

Reckoning Time

Try to think of the answers without looking at the clock.

1. What time is it when the long pointer of the clock is at VI and the short pointer is between VIII and IX?

2. What time is it when the short pointer is at X and the long pointer is at XII?

3. How many minute spaces are there on the dial between XII and I?

4. How many minute spaces are there between XII and III?

5. How many minute spaces are there between I and V?

6. How many minutes does it take the long hand to move from XII to II?

7. How many minutes does it take the long hand to move from XII to V?

8. How many minutes does it take the long hand to move from I to VI?

9. How many minutes are there in an hour?

10. How many minutes are there in $\frac{1}{2}$ of an hour?

11. How many minutes are there in $\frac{1}{4}$ of an hour?

12. How many minutes are an hour less $\frac{1}{4}$ of an hour?

13. How many minutes are $\frac{1}{4}$ of an hour and 3 minutes more?

14. How many minutes are half an hour less 5 minutes?

15. How many minutes are an hour and $\frac{1}{4}$ of an hour?

16. How many minutes are an hour less $\frac{1}{4}$ of an hour?

17. How many minutes are an hour less 20 minutes?

Measures

1. In a foot there are — inches.
2. In $\frac{1}{2}$ of a foot there are — inches.
3. In $1\frac{1}{2}$ feet there are — inches.
4. In $2\frac{1}{2}$ feet there are — inches.
5. In $\frac{1}{4}$ of a foot there are — inches.
6. In $1\frac{1}{4}$ feet there are — inches.
7. In $2\frac{1}{4}$ feet there are — inches.
8. In $\frac{3}{4}$ of a foot there are — inches.

9. In 2 quarts there are — pints.
10. In $1\frac{1}{2}$ quarts there are — pints.
11. In $3\frac{1}{2}$ quarts there are — pints.
12. In $\frac{1}{4}$ of a gallon there are — pints.
13. In $1\frac{1}{2}$ gallons there are — quarts.
14. In $2\frac{1}{2}$ gallons there are — quarts.
15. In $4\frac{1}{4}$ gallons there are — quarts.
16. In $3\frac{1}{4}$ gallons there are — pints.

17. In $\frac{1}{4}$ of a peck there are — quarts.
18. In $\frac{1}{2}$ of a peck there are — pints.
19. In $1\frac{1}{2}$ pecks there are — quarts.
20. In $1\frac{1}{4}$ pecks there are — pints.
21. In $2\frac{1}{2}$ pecks there are — quarts.
22. In $\frac{1}{2}$ of a bushel there are — pecks.
23. In $\frac{1}{4}$ of a bushel there are — quarts.
24. In $2\frac{1}{2}$ bushels there are — pecks.

Drill Work

Go over these exercises repeatedly, giving the answer as quickly as possible, until the sum or difference in each case can be stated instantly when the eye rests upon the combination.

Add at sight:

1.	2.	3.	4.	5.	6.	7.	8.
5	6	7	3	4	2	5	7
3	4	2	6	5	8	5	3
9.	10.	11.	12.	13.	14.	15.	16.
6	5	8	7	5	9	5	9
5	7	4	6	9	3	9	4
17.	18.	19.	20.	21.	22.	23.	24.
8	8	6	7	9	8	8	9
5	7	8	9	6	8	9	9
25.	26.	27.	28.	29.	30.	31.	32.
7	6	5	6	11	13	12	11
10	13	11	14	6	5	7	7

Subtract at sight:

33.	34.	35.	36.	37.	38.	39.	40.
8	9	7	8	8	6	7	9
3	3	2	2	5	2	4	4
41.	42.	43.	44.	45.	46.	47.	48.
8	9	7	9	7	9	8	9
4	2	3	5	5	6	6	7
49.	50.	51.	52.	53.	54.	55.	56.
10	12	10	11	10	12	11	12
2	6	5	8	4	9	6	5

Review

1. What part of an hour are 30 minutes?

2. What part of an hour are 15 minutes?

3. What part of 30 minutes are 15 minutes?

4. How many minutes are there in $\frac{3}{4}$ of an hour?

5. How many times are 10 minutes contained in an hour?

6. How many times are 5 minutes contained in half an hour?

7. What time will it be in 10 minutes after quarter past 9 o'clock?

8. What time will it be in 15 minutes after half past 9?

9. What time will it be in 20 minutes after 10 minutes of 10?

10. How much will 5 tons of coal cost at 6 dollars a ton?

11. If 3 tons of coal cost 15 dollars, how much will 6 tons cost?

12. If 2 cards of buttons cost 5 cents, how many can I buy for 20 cents?

13. If a man earns 5 dollars in 3 days, how much will he earn in 6 days?

14. If a man earns 12 dollars in 4 days, how much will he earn in 2 days?

15. If a peck of apples costs 20 cents, how much will half a bushel cost?

16. A farmer has 48 sheep in 4 equal flocks. How many are there in each flock?

17. How many sheep would be $\frac{3}{4}$ of his sheep?

Original Problems

Make problems and give the answers:

1. A lady bought some berries at 15 cents a box.

2. A boy wishes to buy some apples. 2 apples cost 5 cents.

3. Cherries cost 12 cents a quart.

4. I paid 65 cents for a can of milk at 5 cents a quart.

5. A man earned 4 dollars a day and worked long enough to earn 52 dollars.

6. A man bought a peck of peanuts for 48 cents.

7. 6 hens have 11 chickens each.

8. 3 hens have 24 chickens in all.

9. A farmer had 30 sheep and sold some of them.

10. A farmer had — chickens. He sold some and then bought more.

11. How many weeks are there in — days?

12. How many days are there in — weeks?

13. How many days are there in — weeks and — days?

14. When it is quarter past three o'clock the long hand of the clock is — and the short hand is —.

15. When it is — minutes past four o'clock the short hand is — and the long hand is —.

16. When it is — minutes past five o'clock the short hand is — and the long hand is —.

17. It is now — o'clock. In an hour and a quarter it will be —.

18. In an hour and a half it will be —. It is now —.

1. — half dollars make a dollar.

2. — quarter dollars make a half dollar.

3. — quarter dollars make a dollar.

4. — dimes make a dollar.

5. — dimes make a half dollar.

6. — 5-cent pieces make a quarter dollar.

7. — 5-cent pieces make a half dollar.

8. — 5-cent pieces make a dollar.

9. A 5-cent piece and — dimes make a quarter dollar.

10. A dime and — 5-cent pieces make a quarter dollar.

11. A cent and — 5-cent pieces make 11 cents.

12. A 5-cent piece and — cents make 8 cents.

13. A dime, a 5-cent piece, and — cents make 19 cents.

14. A half dollar and — dimes make 70 cents.

15. A quarter dollar, a 5-cent piece, and — cents make 34 cents.

16. A quarter dollar and — dimes make 45 cents.

17. A quarter dollar, two dimes, and three 5-cent pieces make — cents.

18. Six dimes and — 5-cent pieces make 75 cents.

19. A half dollar less four 5-cent pieces is — cents.

20. A half dollar less 2 dimes and — cents is 28 cents.

21. A half dollar, a dime, and 7 cents is — cents.

Review

See page 73.

1. In 17 there are — 5's and — over.
2. In 19 there are — 4's and — over.
3. In 25 there are — 6's and — over.
4. In 22 there are — 5's and — over.
5. In 23 there are — 7's and — over.
6. In 30 there are — 4's and — over.
7. 3 is contained in 19 — times with — over.
8. 4 is contained in 18 — times with — over.
9. 5 is contained in 23 — times with — over.
10. 4 is contained in 27 — times with — over.
11. 6 is contained in 16 — times with — over.
12. 7 is contained in 24 — times with — over.

13.	14.	15.	16.	17.	18.
3)34	4)46	4)47	5)27	3)64	4)86
19.	**20.**	**21.**	**22.**	**23.**	**24.**
6)27	6)68	4)45	4)41	3)34	3)32
25.	**26.**	**27.**	**28.**	**29.**	**30.**
5)28	5)55	5)51	6)39	6)32	6)61
31.	**32.**	**33.**	**34.**	**35.**	**36.**
7)24	7)72	3)35	4)49	6)45	7)79
37.	**38.**	**39.**	**40.**	**41.**	**42.**
4)47	6)75	7)69	5)63	6)70	7)82

Making Change

1. Mary bought some apples for 16 cents and gave the man 2 dimes. How much change did he give her?

2. I bought 6 two-cent stamps and paid for them with a dime and a 5-cent piece. How many cents did I get back with the stamps?

3. If I should buy 2 pounds of meat at 10 cents a pound and pay for it with a quarter dollar, how much change would there be?

4. John had a half dollar, and spent 25 cents at one time and 10 cents at another time. How much had he left?

5. How many pounds of sugar at 6 cents a pound can I buy with a quarter dollar, and how much change will be left?

6. How many pounds of meat at 7 cents a pound can I buy for a half dollar, and how much change will be left?

7. What pieces of money may I use to pay 18 cents?

8. What pieces of money may I use to pay 27 cents?

9. What pieces may I use to pay 30 cents?

10. What pieces of money will make 45 cents?

11. What pieces will make 60 cents?

12. What pieces will make 48 cents?

13. What pieces will make 73 cents?

14. How much change shall I receive if I pay a bill of 28 cents with a half dollar?

15. How much change will there be in paying a bill of 64 cents with a half dollar and a quarter dollar?

16. How much change will there be in paying 35 cents with 2 quarter dollars?

Thirds

1. How many 4's are there in 12?
2. What is $\frac{1}{3}$ of 12?
3. What is $\frac{1}{3}$ of 15?
4. 6 is $\frac{1}{3}$ of what number?

6 is $\frac{1}{3}$ of 3 times 6.

5. 7 is $\frac{1}{4}$ of what number?
6. What is the difference between $\frac{1}{2}$ of 12 and $\frac{1}{3}$ of 12?
7. What is the difference between $\frac{1}{3}$ of 12 and $\frac{1}{4}$ of 12?
8. What is $\frac{1}{2}$ of 18?
9. What is the difference between $\frac{1}{2}$ of 18 and $\frac{1}{3}$ of 18?
10. What is $\frac{1}{3}$ of 9?
11. How many are $\frac{2}{3}$ of 9?
12. How many are $\frac{2}{3}$ of 12?
13. How many are $\frac{2}{3}$ of 15?
14. What is $\frac{1}{4}$ of 8?
15. How many are $\frac{3}{4}$ of 8?
16. How many are $\frac{3}{4}$ of 12?
17. How many are $\frac{3}{4}$ of 16?
18. What is the difference between $\frac{1}{2}$ of 12 and $\frac{3}{4}$ of 12?
19. What is the difference between $\frac{1}{2}$ of 12 and $\frac{2}{3}$ of 12?
20. How many are $\frac{2}{3}$ of 18?
21. What is the difference between $\frac{1}{3}$ of 18 and $\frac{2}{3}$ of 18?
22. What is the difference between $\frac{2}{3}$ of 12 and $\frac{2}{3}$ of 18?

Drill Work

In example 1, say "nine, fifteen, twenty," etc. Add and subtract as rapidly as possible.

1. $6+3+6+5+4+5=?$
2. $10+5+10+3+2+6=?$
3. $8+4+3+5+6+7=?$
4. $9+6+3+7+5+9=?$
5. $12+6+2+7+3+4=?$
6. $3+7+4+6+5+6=?$
7. $5+8+7+3+7-5=?$
8. $9+5+3+8+9-4=?$
9. $7+8+5+6+6-6=?$
10. $10+9+8+3+10-10=?$
11. $11+4+4+7+3-7=?$
12. $8+4+8+9+6-5=?$
13. $6+6+5+3-10+5=?$
14. $8+7+7+3-5+10=?$
15. $10+6+6+8-6+4=?$
16. $9+6+3+5-5+2=?$
17. $12+3+7+3-1+4=?$
18. $7+5+8+7-7+6=?$
19. $10-5+4-3+6+3=?$
20. $8+4-6+4+5-6=?$
21. $11-6+5+8-8+4=?$
22. $4+8+8-10+5-10=?$
23. $6+6-6+10-5+10=?$
24. $10+10-5+10+5-10=?$

Review

1. If 3 books cost 6 dollars, how much will one book cost?

2. If 3 books cost 6 dollars, how much will 2 books cost?

3. If 3 pencils cost 12 cents, how much will 2 pencils cost?

4. How much will 5 pencils cost?

5. What part of 20 is 5?

Since 5 is contained 4 times in 20, 5 is $\frac{1}{4}$ of 20.

6. What part of 18 is 6?

7. If 4 pounds of sugar cost 20 cents, what is the cost of 1 pound?

8. What is the cost of 3 pounds?

9. What is the cost of 5 pounds?

10. If 3 pounds of grapes cost 18 cents, what is the cost of 1 pound?

11. What is the cost of 7 pounds?

12. How many pints are there in $\frac{1}{4}$ of a gallon?

13. How many pints are there in $\frac{3}{4}$ of a gallon?

14. How many quarts are there in $\frac{3}{4}$ of a peck?

15. How much will half a peck of beans cost at 8 cents a quart?

16. How many quarts are there in half a bushel?

17. How much will $\frac{1}{2}$ of a bushel of cranberries cost at 5 cents a quart?

18. How many inches are there in $\frac{2}{3}$ of a foot?

19. How many inches are there in $\frac{1}{3}$ of 2 feet?

20. How many inches are there in $\frac{1}{4}$ of a foot?

21. How many inches are there in $\frac{1}{4}$ of 2 feet?

Explain one or two examples. Do not take time to explain them all.

Hereafter do not write the parts of the answer separately. Write the figure for the ones and keep the number of tens in mind to be added to the column of tens.

Add:

1.	2.	3.	4.	5.	6.
12	26	33	24	31	44
23	14	22	36	28	12
46	32	18	30	25	26

7.	8.	9.	10.	11.	12.
52	42	16	44	19	25
18	27	61	33	29	32
28	29	22	22	45	38

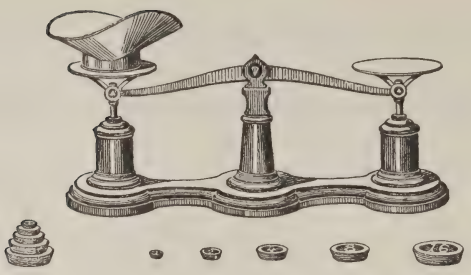
13.	14.	15.	16.	17.	18.
28	33	61	35	25	36
31	23	24	15	18	28
30	40	14	25	28	38

Subtract:

19.	20.	21.	22.	23.	24.
66	75	30	30	34	45
22	35	10	12	16	28

25.	26.	27.	28.	29.	30.
85	80	70	73	64	67
65	20	25	45	28	39

31.	32.	33.	34.	35.	36.
50	85	80	90	90	95
35	35	35	88	75	78



1. There are 16 ounces in a pound. How many ounces are there in half a pound?

2. How many ounces are there in $\frac{1}{4}$ of a pound?

3. If meat costs 8 cents a pound, how much will $\frac{3}{4}$ of a pound cost?

4. If cheese costs 16 cents a pound, how much will one ounce of cheese cost?

5. How much will 8 ounces cost?

6. If butter costs 24 cents a pound, how much will half a pound cost?

7. How much will $\frac{1}{4}$ of a pound cost?

8. How much will $\frac{3}{4}$ of a pound cost?

9. How much is $\frac{1}{2}$ of 32?

10. How much is $\frac{1}{4}$ of 32?

11. If tea costs 32 cents a pound, how much will half a pound cost?

12. How much will $\frac{1}{4}$ of a pound cost?

13. I bought a pound and a half of cheese at 12 cents a pound. How much did I pay?

14. How much will $2\frac{1}{2}$ pounds of raisins cost at 6 cents a pound?

15. How much will $1\frac{1}{4}$ pounds of nuts cost at 8 cents a pound?

Drill Table

1.	2.	3.	4.
$2 \times 8 = ?$	$7 \times 8 = ?$	$16 \div 8 = ?$	$56 \div 8 = ?$
$3 \times 8 = ?$	$8 \times 8 = ?$	$32 \div 8 = ?$	$72 \div 8 = ?$
$4 \times 8 = ?$	$9 \times 8 = ?$	$24 \div 8 = ?$	$80 \div 8 = ?$
$5 \times 8 = ?$	$10 \times 8 = ?$	$48 \div 8 = ?$	$64 \div 8 = ?$
$6 \times 8 = ?$	$8 \times 10 = ?$	$40 \div 8 = ?$	$48 \div 8 = ?$

5.	6.	7.	8.
$7 \times 3 = ?$	$28 \div 4 = ?$	$8 \times 3 = ?$	$20 \div 4 = ?$
$7 \times 4 = ?$	$15 \div 3 = ?$	$5 \times 4 = ?$	$24 \div 3 = ?$
$6 \times 3 = ?$	$21 \div 3 = ?$	$9 \times 3 = ?$	$32 \div 4 = ?$
$9 \times 4 = ?$	$36 \div 4 = ?$	$8 \times 4 = ?$	$27 \div 3 = ?$
$5 \times 3 = ?$	$18 \div 3 = ?$	$10 \times 3 = ?$	$30 \div 3 = ?$

9.	10.	11.	12.
$4 \times 5 = ?$	$30 \div 5 = ?$	$8 \times 5 = ?$	$54 \div 6 = ?$
$4 \times 6 = ?$	$20 \div 5 = ?$	$9 \times 6 = ?$	$40 \div 5 = ?$
$6 \times 5 = ?$	$42 \div 6 = ?$	$9 \times 5 = ?$	$48 \div 6 = ?$
$7 \times 6 = ?$	$24 \div 6 = ?$	$8 \times 6 = ?$	$45 \div 5 = ?$
$5 \times 6 = ?$	$30 \div 6 = ?$	$10 \times 6 = ?$	$60 \div 6 = ?$

13.	14.	15.	16.
$3 \times 7 = ?$	$28 \div 7 = ?$	$7 \times 7 = ?$	$49 \div 7 = ?$
$3 \times 8 = ?$	$21 \div 7 = ?$	$6 \times 8 = ?$	$56 \div 7 = ?$
$4 \times 7 = ?$	$42 \div 7 = ?$	$8 \times 7 = ?$	$48 \div 8 = ?$
$6 \times 7 = ?$	$24 \div 8 = ?$	$9 \times 7 = ?$	$70 \div 7 = ?$
$5 \times 7 = ?$	$35 \div 7 = ?$	$10 \times 7 = ?$	$63 \div 7 = ?$

1. If there are 28 lines on each page of a book, how many lines are there on 3 pages?

2. There are 24 hours in a day. How many hours are there in 4 days?

3. Find how many gallons there are in 64 quarts.

4. Find how many quarts there are in 19 gallons.

5. 8 is $\frac{1}{2}$ of what number?

See p. 114, Ex. 4.

6. 12 is $\frac{1}{2}$ of what number?

7. How many feet are there in 24 inches?

8. How many pieces 3 inches long can be cut from a string 15 inches long?

9. How many pieces 4 inches long can be cut from a string 4 feet long?

10. How many ounces are there in half a pound of tea?

11. How many small packages of 2 ounces each will half a pound of tea make?

12. How many ounces are there in 2 pounds of tea?

13. How many packages of 2 ounces each will 2 pounds of tea make?

14. How many packages of 4 ounces each will a pound make?

15. How many packages of 4 ounces each will a pound and a half make?

16. How many packages of 3 ounces each will 3 pounds make?

17. How many packages of 4 ounces each will 4 pounds make?

Addition and Subtraction

Try to give the answers to these without using a pencil.

1.	2.	3.	4.
$53 + 25 =$	$48 + 22 =$	$85 - 15 =$	$38 + 28 =$
$72 + 13 =$	$37 + 44 =$	$50 + 25 =$	$46 - 28 =$
$69 - 43 =$	$59 - 29 =$	$85 - 20 =$	$32 + 39 =$
$38 - 12 =$	$56 + 25 =$	$75 + 15 =$	$66 - 36 =$
$62 + 27 =$	$42 - 24 =$	$90 - 25 =$	$70 - 27 =$

5.	6.	7.	8.
$21 + 29 =$	$72 + 15 =$	$20 + 50 =$	$61 - 23 =$
$32 + 59 =$	$75 - 50 =$	$28 - 18 =$	$41 + 49 =$
$60 - 26 =$	$25 + 25 =$	$36 + 36 =$	$39 - 19 =$
$65 + 15 =$	$65 - 34 =$	$42 - 20 =$	$56 + 26 =$
$80 - 70 =$	$62 - 35 =$	$48 - 39 =$	$52 - 25 =$

9.	10.	11.	12.
$64 - 32 =$	$33 + 33 =$	$29 + 28 =$	$90 - 45 =$
$40 - 12 =$	$99 - 66 =$	$68 - 49 =$	$42 + 50 =$
$45 + 45 =$	$42 + 42 =$	$35 + 35 =$	$89 - 49 =$
$55 - 11 =$	$85 - 17 =$	$62 - 31 =$	$74 - 37 =$
$33 + 22 =$	$62 - 35 =$	$70 - 22 =$	$52 + 34 =$

13.	14.	15.	16.
$18 + 18 =$	$70 - 35 =$	$48 + 28 =$	$50 + 45 =$
$38 - 19 =$	$36 + 36 =$	$53 - 27 =$	$95 - 25 =$
$22 + 33 =$	$28 + 28 =$	$37 + 25 =$	$85 - 38 =$
$55 - 33 =$	$76 - 38 =$	$69 + 28 =$	$69 + 19 =$
$99 - 77 =$	$49 + 49 =$	$92 - 38 =$	$99 - 59 =$

Original Problems

Make problems and give the answers:

1. Carrie bought some oranges with a quarter dollar.

2. I bought some two-cent stamps and some one-cent stamps with a dime and a five-cent piece.

3. A boy had a half dollar and bought a ball.

4. Harold spent $\frac{1}{3}$ of his money for candy.

5. A boy had 12 marbles and sold $\frac{2}{3}$ of them.

6. $\frac{1}{4}$ of the children in the class would be 6 children.

7. $\frac{3}{4}$ of the oranges which I have would be 9 oranges.

8. I wish to buy 5 apples. 2 apples would cost 4 cents.

9. $\frac{1}{2}$ of a gallon of oil costs 7 cents.

10. A peck of apples costs 24 cents.

11. $\frac{1}{4}$ of a pound of cheese costs 4 cents.

12. A boy bought some nuts at 12 cents a pound.

13. There are 27 sheep in one pasture and more in another.

14. There are 25 paintings on one wall and enough on another to make 35 in all.

15. A man bought a horse and sold him so as to gain 5 dollars.

16. There are 30 lines on each page of a book.

17. There are 24 hours in a day.

18. There are 60 minutes in an hour.

19. A grocer divided 20 pounds of sugar into 4-pound packages.

20. A lady cut a piece of ribbon which was 2 feet long into pieces 4 inches long.

Review

1. $\frac{1}{3}$ of 18 is —.
2. $\frac{2}{3}$ of 18 is —.
3. $\frac{2}{3}$ of 21 is —.
4. $\frac{1}{4}$ of 20 is —.
5. $\frac{3}{4}$ of 20 is —.
6. $\frac{3}{4}$ of 24 is —.
7. 5 is $\frac{1}{3}$ of what number?
8. 10 is $\frac{2}{3}$ of what number?

Since 10 is 2 thirds of the number, 1 third of the number is $\frac{1}{2}$ of 10, or 5; and 3 thirds or the whole number is 3 times 5, or 15.

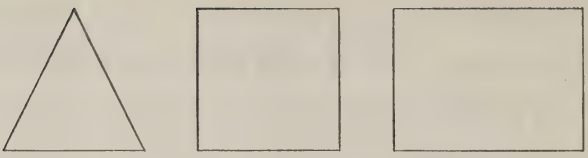
9. 6 is $\frac{3}{5}$ of what number?

Since 6 is 3 fifths of the number, 1 fifth of the number is $\frac{1}{3}$ of 6, or 2; and 5 fifths or the whole number is 5×2, or 10.

10. 4 is $\frac{1}{4}$ of what number?
11. 8 is $\frac{2}{4}$ of what number?
12. 9 is $\frac{3}{4}$ of what number?
13. How many inches are there in $\frac{1}{3}$ of a foot?
14. How many inches are there in $\frac{2}{3}$ of a foot?
15. How many inches are there in $\frac{3}{4}$ of a foot?
16. What part of a pound are 4 ounces?

See p. 116, Ex. 15.

17. What part of a pound are 12 ounces?
18. How many ounces are there in $1\frac{1}{4}$ pounds?
19. How much will $\frac{3}{4}$ of a yard of cloth cost at 20 cents a yard?
20. What will be the cost of 8 ounces of cheese at 16 cents a pound?
21. What will be the cost of 12 ounces of lard at 8 cents a pound?



1. How many corners has a triangle?

2. How many corners have 4 triangles?

3. How many corners have 5 squares?

4. How many corners have 7 oblongs?

5. If the sides of a triangle are equal to one another and it is twelve inches around the triangle, how long is one side?

6. If it is 24 inches around a square, how long is one side of the square?

7. If an oblong is twice as long as it is wide and it is 3 feet half way around the oblong, how long is it?

8. How many feet have 7 horses?

9. 20 shoes are enough for how many horses?

10. An ox wears 2 shoes on each foot. How many shoes has one ox?

11. How many shoes have 4 oxen?

12. 24 shoes are enough for how many oxen?

13. If there are 42 seats in the room and 6 seats in a row, how many rows are there?

14. 36 children are to be arranged in equal rows. How many may be placed in a row, and how many rows may there be?

15. There are 64 squares on a checkerboard and 8 in each row. How many rows are there?

Drill in Addition

Practice giving the answers to examples 1–32 rapidly, at sight.

Add:

1.	2.	3.	4.	5.	6.	7.	8.
5	6	6	4	3	4	7	8
5	6	5	6	6	4	6	7

9.	10.	11.	12.	13.	14.	15.	16.
3	4	6	5	8	8	7	8
9	7	7	7	3	5	7	8

17.	18.	19.	20.	21.	22.	23.	24.
4	8	6	9	3	9	5	7
8	6	9	4	8	9	9	9

25.	26.	27.	28.	29.	30.	31.	32.
5	8	7	9	9	8	6	8
8	4	6	7	8	7	8	9

33.	34.	35.	36.	37.	38.	39.	40.
4	5	4	6	9	4	7	6
6	9	8	4	8	7	7	6
3	3	5	0	0	4	8	9
8	0	3	5	8	5	8	7
5	8	6	5	5	6	9	7
7	6	7	9	6	5	5	6

41.	42.	43.	44.	45.	46.	47.	48.
7	8	8	7	7	5	5	9
2	9	8	6	7	5	5	1
0	4	8	7	7	6	6	9
8	5	8	6	7	6	4	1
3	8	8	7	7	5	5	5
6	3	8	7	7	5	5	5

Subtract:

1.	2.	3.	4.	5.	6.
36	42	50	65	31	52
24	24	25	35	19	28

7.	8.	9.	10.	11.	12.
75	75	80	96	91	88
25	50	55	48	75	29

Multiply:

13.	14.	15.	16.	17.	18.
32	23	48	35	25	38
3	4	2	2	3	2

19.	20.	21.	22.	23.	24.
40	30	39	12	11	16
2	3	2	8	9	6

25.	26.	27.	28.	29.	30.
23	39	24	12	15	24
4	2	4	7	6	3

Divide:

31.	32.	33.	34.	35.	36.
2)64	2)18	2)54	3)45	4)40	4)56

37.	38.	39.	40.	41.	42.
5)40	5)55	5)65	6)48	6)60	6)78

43.	44.	45.	46.	47.	48.
7)49	7)77	7)84	8)88	8)96	6)72

Problems

1. At 2 cents each, how much will it cost to have 3 collars and 2 pair of cuffs washed at the laundry?

2. How much will it cost for 5 collars and 3 pair of cuffs?

3. If a man smokes a cigar after each meal, how many will he smoke in 2 weeks?

4. If the cigars cost 5 cents each, how much will he pay for cigars in the month of November?

5. A room has 6 windows and there are 16 panes of glass in each window. How many panes are there in all?

6. A man traveled 65 miles by steamboat, 27 miles by train, and 5 miles by stage. How many miles did he travel in all?

7. How many more miles did he travel by steamboat than by train?

8. Mr. Ward is three times as old as his daughter. He is 36 years old. How old is his daughter?

9. How much older is he than his daughter?

10. Charles is $\frac{1}{4}$ as old as his father. He is 10 years old. How old is his father?

11. How much younger is he than his father?

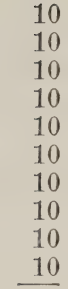
12. The sum of two numbers is 20, and one of the numbers is 12. What is the other number?

13. The sum of two numbers is 42, and one of the numbers is 18. What is the other number?

14. Two boys together have 76 cents. One of them has 40 cents. How many has the other?

15. Herbert has 35 cents and Donald has 15 cents more than Herbert has. How many have they both?

Hundreds



Ten tens make one hundred.

Ten times ten are one hundred.

$10 \times 10 = 100$.

$100 \div 10 = 10$.

1. Write three tens and two ones.
2. Write four tens and no ones.
3. Write one hundred, two tens, and five ones.
4. Write one hundred, no tens, and no ones.
5. Write three hundreds, five tens, and no ones.
6. Write seven hundreds, no tens, and six ones.
7. Write one hundred.
8. Write one hundred and forty.
9. Write one hundred and forty-eight.
10. Write two hundred and seven.
11. Write six hundred and fifty.
12. Write nine hundred and forty-two.
13. How many 10's are there in 50?
14. How many 10's are there in 200?
15. How many 10's are there in 250?
16. How many 10's are there in 500?
17. Ten is contained in 100 how many times?
18. Ten is contained in 300 how many times?

Review

"Thirty days hath September,
April, June, and November."

Each of the other months has 31 days, except February. February usually has 28 days, but has 29 days every fourth year.

1. How many days are there in the months of August, September, and October?

2. How many more days are there in the months of July, August, and September than in the months of November and December?

3. How many weeks and days are there in the month of January?

4. How many weeks and days are there in the months of March and April?

5. How many hours are there in 3 days?

6. How many times are 6 minutes contained in an hour?

7. How many hours are there in $\frac{1}{3}$ of a day?

8. How many hours are there in $\frac{3}{4}$ of a day?

9. 12 hours are what part of a day?

10. How many hours are there in $\frac{1}{4}$ of a day?

11. How many sides have 5 triangles?

12. How many sides have 8 squares?

13. If there are 5 windows in a room and each window has 8 panes of glass, how many panes are there?

14. A boy is $\frac{1}{3}$ as old as his father. He is 10 years old. How old is his father?

15. How much older is his father than he?

16. The sum of two numbers is 35 and one of the numbers is 10. What is the other number?

17. The sum of three numbers is 45. Two of the numbers are 16 and 20. What is the other number?

1. Add 453 and 267.

453
267
720

7 ones and 3 ones are 10 ones, or 1 ten. 1 ten, 6 tens, and 5 tens are 12 tens, or 1 hundred and 2 tens.

1 hundred, 2 hundreds, and 4 hundreds are 7 hundreds.

2. Subtract 389 from 872.

9 ones cannot be taken from 2 ones.

872
389
483

7 tens and 2 ones equal 6 tens and 12 ones.

9 ones from 12 ones leaves 3 ones. 8 tens cannot be taken from 6 tens. 8 hundreds and 6 tens equal 7 hundreds and 16 tens. 8 tens from 16 tens leaves 8 tens. 3 hundreds from 7 hundreds leaves 4 hundreds.

When the explanation is well understood, omit it. Do not take the time to explain all the examples so fully.

Add:

3.	4.	5.	6.	7.	8.
100	200	200	200	130	145
25	100	50	125	60	25
9.	**10.**	**11.**	**12.**	**13.**	**14.**
85	60	75	55	90	36
15	40	75	65	70	82
15.	**16.**	**17.**	**18.**	**19.**	**20.**
250	225	316	420	487	642
100	225	204	138	221	178

Subtract:

21.	22.	23.	24.	25.	26
200	250	334	456	375	450
100	125	118	228	144	225
27.	**28.**	**29.**	**30.**	**31.**	**32.**
320	440	428	560	543	682
180	260	247	208	261	249

Review

Give all the answers orally.

1. Two hundred and one hundred are —.
2. Two hundred and one hundred fifty are —.
3. Twenty-six and three hundred are —.
4. Twenty-five and twenty-five are —.
5. One hundred twenty-five and twenty-five are —.
6. Seventy-five and twenty-five are —.

7. Two hundred less one hundred are —.
8. One hundred less fifty are —.
9. One hundred less twenty-five are —.
10. Two hundred less fifty are —.
11. Two hundred less seventy-five are —.
12. Three hundred less one hundred fifty are —.

13. 100 and 30 are —.
14. 100 and 30 and 20 are —.
15. 200 and 100 and 60 are —.
16. 50 and 100 and 50 are —.
17. 200 and 125 are —.
18. 150 and 125 are —.

19. 100 less 50 are —.
20. 150 less 25 are —.
21. 200 less 50 are —.
22. 225 less 125 are —.
23. 250 less 125 are —.
24. 500 less 250 are —.

Making Change

1. How many quarter dollars are there in a dollar?

2. How many cents are there in a dollar?

3. How many cents are there in a half dollar?

4. How many cents are there in a half dollar and a quarter dollar?

5. A girl had 50 cents, and bought a book for 35 cents and 2 pencils for 3 cents each. How much money had she left?

6. If I should buy 10 pounds of raisins at 8 cents a pound, how much change should I have left from a dollar bill?

7. I bought 4 pounds of meat at 9 cents a pound and 2 pounds of cheese at 12 cents a pound. I gave a half dollar and a quarter dollar. How much change did I receive?

8. What pieces of money should I use to pay 38 cents?

9. What pieces of money should I use to pay 67 cents?

10. What pieces of money should I use to pay for 2 pair of socks at 23 cents each?

11. What pieces of money would pay for 12 two-cent stamps and 7 one-cent stamps?

12. If I should buy 2 yards of cloth at 8 cents a yard, and should give a quarter dollar, what pieces of money would the clerk give me back?

13. I bought 3 yards of cloth at 20 cents a yard, and 4 yards of ribbon at 6 cents a yard. I paid with a dollar bill. How much change did I receive?

14. What pieces of money would pay for 7 pounds of cheese at 13 cents a pound?

1. Multiply 136 by 4.

$$\begin{array}{r} 136 \\ \times\ 4 \\ \hline 544 \end{array}$$

4 times 6 ones are 24 ones, or 2 tens and 4 ones. 4 times 3 tens are 12 tens. 12 tens and 2 tens are 14 tens, or 1 hundred and 4 tens. 4 times 1 hundred are 4 hundreds. 4 hundreds and 1 hundred are 5 hundreds.

2. Divide 348 by 4.

$$4)\overline{348}$$
$$87$$

4 is contained in 34 tens 8 tens times with 2 tens remaining. 2 tens and 8 ones are 28 ones. 4 is contained in 28 ones 7 times.

When the explanation is well understood, omit it.

Prove the examples in multiplication by dividing the product by the multiplier, and those in division by multiplying the quotient by the divisor.

Multiply:

3.	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**
50	52	41	48	65	89	27
× 2	× 3	× 4	× 4	× 3	× 4	× 7
10.	**11.**	**12.**	**13.**	**14.**	**15.**	**16.**
39	62	85	92	82	100	224
× 8	× 9	× 6	× 4	× 8	× 3	× 2
17.	**18.**	**19.**	**20.**	**21.**	**22.**	**23.**
232	150	225	132	236	184	189
× 3	× 2	× 2	× 4	× 3	× 4	× 6

Divide:

24.	**25.**	**26.**	**27.**	**28.**	**29.**
2)200	2)248	2)450	3)369	3)345	4)488
30.	**31.**	**32.**	**33.**	**34.**	**35.**
4)840	4)856	5)525	5)565	6)672	6)636
36.	**37.**	**38.**	**39.**	**40.**	**41.**
7)147	7)644	8)568	7)707	8)816	7)721

Original Problems

Make problems and give the answers:

1. A man changed a five-dollar bill for half dollars.

2. A man changed a dollar bill for 10-cent pieces.

3. A man changed a two-dollar bill for half dollars, quarter dollars, and 5-cent pieces.

4. I paid a bill of 87 cents.

5. I bought 4 collars at the rate of 2 collars for 25 cents and a necktie for 38 cents.

6. There are 17 eggs in each of 4 nests.

7. There are 160 pupils in 4 schoolrooms.

8. 8 hens have 11 chickens each.

9. 5 tons of coal cost $30.

10. 16 cents will buy 8 apples.

11. A peck of potatoes costs 24 cents.

12. Milk costs 7 cents a quart.

13. Albert can earn a dollar in two days.

14. Robert earns 12 dollars in 4 days.

15. A milkman has a can which holds $2\frac{1}{2}$ gallons.

16. A man bought 2 dozen pencils for 28 cents.

17. A boy picked a peck and 3 quarts of berries.

18. Mary is 4 feet 8 inches tall and her mother is 10 inches taller.

19. Mr. Williams is 5 feet 11 inches tall and his son is 1 foot 2 inches shorter.

20. The length of an oblong is 2 feet 4 inches and its width is 1 foot 8 inches.

1. How many legs have 45 cows?

2. How many wings have 160 birds?

3. 480 shoes would be enough for how many horses?

4. How many pair of shoes are there in 236 shoes?

5. How many ears have 200 children?

6. There are 37 pupils in each of 3 schoolrooms. How many are there in all?

7. In a school there are 145 boys and twice as many girls as boys. How many girls are there?

8. How many children are there in all?

9. In an orchard there are 8 rows of trees and 42 trees in each row. How many trees are there?

10. 200 of the trees are apple trees and the remainder are pear trees. How many are pear trees?

11. A farmer has 100 sheep and divides them into two equal flocks. How many has he in each flock?

12. Another farmer has 3 flocks with 75 in each flock. How many has he?

13. The Amazon River is 60 miles wide at its mouth. How long would it take to row across it, rowing 5 miles an hour?

14. How long would it take to sail across the river and back, at the rate of 6 miles an hour?

15. If there are 250 oranges in a box, how many oranges are there in 3 boxes?

16. The egg of an ostrich weighs about 3 pounds. If a hen's egg weighs 2 ounces, how many hens' eggs will it take to weigh as much as an ostrich's egg?

Fifths

1. One fifth of 10 is —.
2. Two fifths of 10 is —.
3. One fifth of 15 is —.
4. Three fifths of 15 is —.
5. Three fifths of 10 is —.

6. 4 is — fifths of 10.
7. 8 is — fifths of 10.
8. 6 is — fifths of 15.
9. 12 is — fifths of 15.
10. 6 is — fifths of 10.

11. One fifth of 5 is —.
12. Three fifths of 5 is —.
13. Two fifths of 15 is —.
14. Four fifths of 10 is —.
15. Four fifths of 15 is —.

16. 2 is — fifth of 10.
17. 10 is — fifths of 10.
18. 3 is — fifths of 15.
19. 15 is — fifths of 15.
20. 9 is — fifths of 15.

21. 8 is $\frac{1}{2}$ of —.
22. 3 is $\frac{1}{4}$ of —.
23. 9 is $\frac{3}{4}$ of —.
24. 4 is $\frac{1}{3}$ of —.
25. 6 is $\frac{2}{5}$ of —.

26. $\frac{1}{2}$ of 20 is —.
27. $\frac{3}{4}$ of 16 is —.
28. $\frac{2}{3}$ of 18 is —.
29. $\frac{2}{5}$ of 20 is —.
30. $\frac{3}{5}$ of 25 is —.

31. 7 is $\frac{1}{2}$ of —.
32. 4 is $\frac{3}{4}$ of —.
33. 6 is $\frac{3}{4}$ of —.
34. 5 is $\frac{1}{3}$ of —.
35. 8 is $\frac{2}{3}$ of —.

36. $\frac{1}{2}$ of 16 is —.
37. $\frac{1}{3}$ of 18 is —.
38. $\frac{2}{3}$ of 15 is —.
39. $\frac{3}{4}$ of 20 is —.
40. $\frac{2}{5}$ of 25 is —.

Measures

See the tables on page 256.

1. How many quarts of milk can be put into a can which holds $3\frac{1}{2}$ gallons?

2. If a milkman sells 50 quarts of milk a day, how many gallons does he sell?

3. If milk costs 3 cents a pint, how much will a gallon cost?

4. If molasses costs 64 cents a gallon, how much will a quart and a half cost at the same rate?

5. A man bought a dozen pencils for 25 cents and sold them for 3 cents each. How much did he gain?

6. If he should buy 2 dozen pencils at 20 cents a dozen and sell them for 3 cents each, how much would he gain?

7. How many quarts are there in a peck and 2 quarts?

8. If beans cost 48 cents a peck, what is the cost of a quart?

9. What is the cost of a peck and 2 quarts?

10. If a man should buy a peck of beans for 50 cents and should sell them for 9 cents a quart, how much would he gain?

11. How many inches are there in $2\frac{1}{2}$ feet?

12. How many inches are there in 3 feet and 4 inches?

13. Samuel is 4 feet 10 inches tall. How many inches tall is he?

14. His father is 5 feet 10 inches tall. How many inches taller is his father than he?

15. If the length of a square is 4 feet 3 inches, how far is it around the square?

16. If an oblong is 5 feet 7 inches long and 3 feet 4 inches wide, how far is it around the oblong?

1. How many feet make a yard?
2. How many inches make a yard?
3. How many inches are there in $\frac{1}{3}$ of a yard?
4. How many feet are there in $\frac{2}{3}$ of a yard?
5. How many feet are there in $1\frac{1}{3}$ yards?
6. How many feet make 2 yards?

7. What part of a foot are 6 inches?
8. What part of 2 feet are 6 inches?
9. What part of a yard is one foot?
10. What part of 4 feet is one foot?
11. What part of a foot are 3 inches?
12. What part of a foot are 8 inches?

13. One foot less 6 inches are — inches.
14. One foot less 8 inches are — inches.
15. A foot and a half are — inches.
16. $1\frac{1}{4}$ feet are — inches.
17. $1\frac{2}{3}$ feet are — inches.
18. 2 feet less 6 inches are — inches.

19. A yard and 2 feet are — feet.
20. 2 yards and 1 foot are — feet.
21. 2 yards less 2 feet are — feet.
22. 3 yards and 2 feet are — feet.
23. 3 yards less 1 foot are — feet.
24. 5 yards and 2 feet are — feet.

Drill Work

Read the directions on page 108.

Add at sight:

1.	2.	3.	4.	5.	6.	7.	8.
2	3	3	4	6	8	2	5
4	3	3	4	3	2	5	5
4	4	6	4	1	2	5	5

9.	10.	11.	12.	13.	14.	15.	16.
3	3	6	5	4	4	1	2
1	4	3	2	5	3	1	3
6	4	2	2	5	7	8	7

17.	18.	19.	20.	21.	22.	23.	24.
5	3	1	3	4	3	5	2
3	4	2	4	4	4	4	3
3	5	8	6	6	6	4	8

Subtract at sight:

25.	26.	27.	28.	29.	30.	31.	32.
11	12	13	12	11	13	14	15
4	7	6	5	3	4	7	6

33.	34.	35.	36.	37.	38.	39.	40.
11	12	13	15	14	12	15	14
6	3	5	5	6	6	9	4

41.	42.	43.	44.	45.	46.	47.	48.
12	13	14	15	15	13	14	15
9	9	5	4	7	7	8	8

Review

Give as many as possible of the answers mentally.

1. Find the sum of 25, 68, and 43.
2. Find the sum of 84, 125, and 230.
3. Find the difference between 84 and 57.
4. Find the sum of 287 and 369.
5. Find the difference between 146 and 367.
6. Find the sum of 250, 328, and 271.

7. What is the product of 27 and 4?
8. What is the product of 45 and 7?
9. What is the quotient of 20 and 4?
10. What is the quotient of 56 and 7?
11. What is the product of 65 and 5?
12. What is the quotient of 5 and 125?

13. The sum of 125 and 225 is —.
14. The sum of 340 and 139 is —.
15. The difference between 87 and 55 is —.
16. The difference between 78 and 99 is —.
17. The sum of 500 and 300 is —.
18. The difference between 650 and 250 is —.

19. The product of 30 and 8 is —.
20. The quotient of 600 and 6 is —.
21. The sum of 105 and 305 is —.
22. The difference between 125 and 75 is —.
23. The product of 112 and 4 is —.
24. The quotient of 255 and 5 is —.

1. Count by 2's to 20.
2. Count by 2's from 20 to 30.
3. Count by 3's to 21.
4. Count by 3's from 21 to 36.
5. Count by 4's to 20.
6. Count by 4's from 20 to 40.

7. Count backwards by 1's from 20.
8. Count backwards by 2's from 10.
9. Count backwards by 2's from 20.
10. Count backwards by 3's from 12.
11. Count backwards by 3's from 21.
12. Count backwards by 4's from 20.

13. Commence with 1 and add 2's as far as 21.
14. Add 3's to 1 as far as 22.
15. Add 4's to 1 as far as 21.
16. Add 2's to 3 as far as 21.
17. Add 4's to 2 as far as 22.
18. Add 3's to 2 as far as 20.

19. Count by 5's to 20.
20. Count by 5's from 20 to 50.
21. Count by 5's from 50 to 100.
22. Count by 10's to 100.
23. Count by 20's to 100.
24. Count by 25's to 100.

10 cents may be written in the form 10¢.

1. How much will $2\frac{1}{2}$ pounds of meat cost at 10¢ a pound?

2. I bought 4 dozen eggs at 20¢ a dozen. What change did I receive?

3. How many pounds of sugar at 6¢ a pound can be bought for 42 cents?

4. If milk costs 3 cents a pint, how many quarts can I buy for 18 cents?

5. 12 is what part of 24?

6. If a dozen eggs cost 24 cents, how much will one egg cost?

7. If eggs are 24 cents a dozen, how much will 5 eggs cost?

8. How many eggs are $1\frac{1}{2}$ dozen eggs?

9. How many eggs are $2\frac{1}{3}$ dozen eggs?

10. Mary bought 3 dozen eggs at the store and on her way home broke 6 eggs. How many eggs had she left?

11. The children made 6 bouquets for Memorial Day. They had 42 pinks and 24 roses. How many pinks and how many roses could they put into each bouquet?

12. If I should read 3 chapters of a book every day, how long would it take me to read a dozen chapters?

13. If a family should eat 6 bananas every day, how many dozen would it take to last them a week? To last them 2 weeks?

14. How much would a dozen pencils cost at the rate of 2 pencils for 3 cents?

15. How much would a dozen pencils cost at the rate of 3 pencils for 2 cents?

20 cents may be written in the form \$.20; 25 cents may be written in the form \$.25; 5 cents in the form \$.05; and a dollar and 25 cents in the form \$1.25.

ADDITION

275¢	or 2 dollars 75¢	may	\$2.75
68¢	68¢	be	.68
343¢	3 dollars 43¢	written	\$3.43

SUBTRACTION

542¢	or 5 dollars 42¢	may	\$5.42
107¢	1 dollar 7¢	be	1.07
435¢	4 dollars 35¢	written	\$4.35

MULTIPLICATION

117¢	or 1 dollar 17¢	may	\$1.17
8	8	be	8
936¢	9 dollars 36¢	written	\$9.36

DIVISION

5)850¢	or 5)8 dollars 50¢	may be	5)\$8.50
170¢	1 dollar 70¢	written	\$1.70

Notice that the points in the answers are placed directly beneath the points in addends, subtrahend, multiplicand, and quotient.

1. Write 32 cents in a different way. 60 cents. 7 cents.

2. Write 2 dollars and 64 cents in a different way.

3. Write and add: 25 cents, 64 cents, and 31 cents.

4. Write and add: 50¢, 9¢, 25¢, and 36¢.

5. Write and add: a dollar and 6 cents, 2 dollars and 10 cents, and 5 dollars and 65 cents.

6. From 95 cents take 36 cents.

7. From 3 dollars and 60¢ take 2 dollars and 25¢.

8. Multiply: 65 cents by 3; 2 dollars and 37 cents by 2.

9. Divide: 84 cents by 4; 4 dollars and 65 cents by 5.

1. When the minute hand of a clock is 13 minute spaces past XII and the hour hand is between V and VI, it is — minutes past —.

2. When the minute hand is 7 spaces before XII and the hour hand is between VII and VIII, it is — minutes of —.

3. When the hour hand is between II and III and the minute hand is at V, it is — minutes past —.

4. When the hour hand is between X and XI and the minute hand is 3 spaces beyond II, it is — minutes past —.

5. When the hour hand is between VIII and IX and the minute hand is one space beyond V, it is — minutes past —.

6. When the hour hand is between XII and I and the minute hand is at VIII, it is — minutes of —.

7. When the minute hand is 3 spaces beyond IX and the hour hand is between II and III, it is — minutes of —.

8. When the hour hand is between IX and X and the minute hand is at VI, it is — o'clock.

9. When the minute hand is 4 minute spaces beyond VI and the hour hand is between V and VI, it is — o'clock.

10. When the hour hand is a little beyond V and the minute hand is 4 spaces beyond I, it is — o'clock.

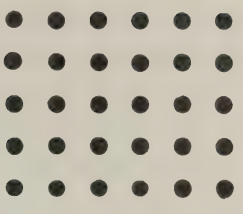
11. When the hour hand is a little before X and the minute hand is at X, it is — o'clock.

12. When the minute hand is 14 minute spaces beyond VI and the hour hand is between IX and X, it is — o'clock.

13. When the hour hand is a little beyond VIII and the minute hand is 1 space beyond II, it is — o'clock.

grade 4

Factors



1. How many are 4 times 5?

2. How many are 5 times 4?

3. How many are 6 times 5?

4. 5 rows of boys with 6 in a row are the same number of boys as 6 rows of boys with how many in a row?

5. 8 times 7 is the same as 7 times what?

6. 9 times 8 is the same as what number times 9?

7. In what different ways may 24 buttons be arranged in rows with equal numbers in the rows?

8. What different pairs of numbers when multiplied together will make 12?

9. What different pairs of numbers when multiplied together will make 18?

10. What different pairs of numbers when multiplied together will make 20?

11. What different pairs of numbers when multiplied together will make 36?

12. Multiply 7 by 3.

13. Multiply 3 by 7.

14. Divide 56 by 8.

15. Divide 56 by 7.

16. Divide 240 by 3.

17. Multiply 80 by 3.

18. Multiply 45 by 4.

19. Divide 180 by 4.

1. A man who had a dollar bill bought 3 pounds of butter at 25 cents a pound, and a pound of cheese for 17 cents. How much money had he left?

2. A man had $12, and bought a coat for $8 and a hat for $2.50. How much money had he left?

3. Find the cost of 6 yards of cloth at 22¢ a yard, and 8 yards of ribbon at 28¢ a yard.

4. How much will 4 barrels of apples cost at $2.25 a barrel?

5. A farmer sold 7 barrels of potatoes at $1.70 a barrel. How much did he receive?

6. Find the amount of this bill:

4 pounds of meat at 16¢ a pound.
2 dozen eggs at 22¢ a dozen.
3 boxes of berries at 17¢ a box.

7. Find what change I shall receive, if I pay for this account with a five-dollar bill:

1 pair of shoes at $2.50.
2 pair of socks at 19¢.
3 handkerchiefs at 15¢.

8. What change shall I receive, if I pay for the following articles with a ten-dollar bill?

8 arithmetics at 35¢.
4 geographies at 85¢.
10 pounds of paper at 22¢.

9. What change shall I receive, if I pay for the following articles with a ten-dollar bill and a two-dollar bill?

5 yards of cloth at $1.40.
1 shirt waist, $2.50.
3 dozen buttons at 35¢.

Original Problems

Make problems and give answers:

1. A man bought $3\frac{1}{2}$ pounds of meat at the store.

2. He bought some eggs at 16 cents a dozen.

3. Mary bought some cloth for 24 cents.

4. She bought 4 handkerchiefs and 6 towels.

5. The girls have 45 pinks for bouquets.

6. John ate 2 oranges every day.

7. Clara came home when the minute hand was 2 spaces beyond V.

8. Lester came to school when the minute hand was 4 spaces beyond IX.

9. A man had a dollar bill and bought some sugar.

10. A lady had a five-dollar bill and bought some cloth and some towels.

11. A farmer sold some potatoes at $2.20 a barrel.

12. He sold 8 bushels of apples.

13. A lady bought $\frac{1}{4}$ of a yard of cloth.

14. Charles has a number of 5-cent pieces.

15. Ella placed 36 buttons in rows.

16. It takes 5 oranges to weigh a pound.

17. A man bought 7 barrels of flour.

18. A man can walk 8 miles in 2 hours.

19. I bought some oranges at the rate of 2 oranges for 3 cents.

20. I bought some apples at the rate of 3 apples for 5 cents.

Prove the answers correct by adding downwards as well as upwards.

Add:

1.	2.	3.	4.	5.	6.
240	125	291	404	425	218
36	260	183	130	226	98
84	99	365	266	122	370

7.	8.	9.	10.	11.	12.
35	152	248	302	482	24
86	94	350	81	91	304
242	75	94	94	183	180
79	147	126	155	217	79

13.	14.	15.	16.	17.	18.
248	66	158	245	127	145
219	385	355	319	247	329
118	225	276	142	161	168
328	128	164	227	274	244

19. Add thirty-five, one hundred, fifty-six, three hundred seventeen, two hundred forty-one.

20. Add three hundred seventy-five, two hundred thirty-four, one hundred nine.

21. Add seventy-seven, five hundred forty, two hundred nine.

22. Find the sum of two hundred sixty-five, one hundred four, eighty-five, three hundred.

23. Find the sum of two hundred two, one hundred fifty-three, forty, thirty-nine, eighty-seven.

Compound Quantities

1. 2 quarts and 1 pint equal — pints.
2. 3 gallons and 2 quarts equal — quarts.
3. 2 gallons and 1 pint equal — pints.
4. 3 pecks and 2 quarts equal — quarts.
5. 1 bushel and 2 pecks equal — pecks.
6. 1 bushel and 3 quarts equal — quarts.

7. 1 foot and 2 inches equal — inches.
8. 3 feet and 3 inches equal — inches.
9. 1 yard and 2 feet equal — feet.
10. 4 yards and 2 feet equal — feet.
11. 1 yard and 5 inches equal — inches.
12. 1 pound and 4 ounces equal — ounces.

13. 7 quarts equal — gallon and — quarts.
14. 7 pints equal — quarts and — pint.
15. 9 pints equal — gallon and — pint.
16. 24 quarts equal — pecks.
17. 18 quarts equal — pecks and — quarts.
18. 34 quarts equal — bushel and — quarts.

19. 18 inches equal — foot and — inches.
20. 25 inches equal — feet and — inch.
21. 5 feet equal — yard and — feet.
22. 8 feet equal — yards and — feet.
23. 40 inches equal — yard and — inches.
24. 20 ounces equal — pound and — ounces.

Problems

1. Find the cost of 3 barrels of flour at $4.50 a barrel.

2. Find the cost of 7 pair of shoes at $2.25 a pair.

3. If 2 pair of skates cost $4.60, how much does one pair cost?

4. The sum of $15.42 was divided among 3 men. How much did each receive?

5. James has $2.40 to spend in 6 days. How much can he spend each day?

6. A man earns $3.25 a day. How much does he earn in a week of 6 days?

7. If 6 barrels of flour cost $18.72, how much does a barrel cost?

8. William paid $12.50 for a suit of clothes, $15 for an overcoat, and $3.25 for a pair of shoes. How much did he pay in all?

9. He paid with 4 ten-dollar bills. How much change did he receive?

10. I have $8.50. If I should buy a hat for $2.50 and a pair of shoes for $3.25, how much money should I have left?

11. John had $3.40. He earned $5 more and then spent $2.50. How much had he then?

12. I had $12 and spent $3.50. I afterward received $4. How much had I then?

13. Henry bought 20 papers. He sold 8 on one street and 6 on another street. He bought 10 more papers. How many had he then?

14. I had $7.50. I spent $4.32 and earned $3.25. How much had I then?

Drill Table

1.	2.	3.	4.
$2 \times 9 = ?$	$8 \times 9 = ?$	$18 \div 9 = ?$	$63 \div 9 = ?$
$3 \times 9 = ?$	$7 \times 9 = ?$	$45 \div 9 = ?$	$81 \div 9 = ?$
$5 \times 9 = ?$	$10 \times 9 = ?$	$54 \div ? = 6$	$36 \div 9 = ?$
$4 \times 9 = ?$	$9 \times 8 = ?$	$72 \div 9 = ?$	$72 \div 8 = ?$
$6 \times 9 = ?$	$9 \times 9 = ?$	$90 \div ? = 10$	$63 \div 7 = ?$

5.	6.	7.	8.
$4 \times 6 = ?$	$7 \times 9 = ?$	$3 \times 7 = ?$	$3 \times 8 = ?$
$6 \times 4 = ?$	$8 \times 7 = ?$	$28 \div 7 = ?$	$16 \div 8 = ?$
$5 \times 7 = ?$	$21 \div 7 = ?$	$5 \times 6 = ?$	$4 \times 7 = ?$
$35 \div 5 = ?$	$9 \times 6 = ?$	$49 \div 7 = ?$	$28 \div ? = 7$
$30 \div 6 = ?$	$48 \div 8 = ?$	$8 \times 6 = ?$	$30 \div ? = 6$

9.	10.	11.	12.
$4 \times 8 = ?$	$9 \times 7 = ?$	$8 \times 8 = ?$	$10 \times 7 = ?$
$6 \times 8 = ?$	$7 \times 9 = ?$	$9 \times 8 = ?$	$10 \times 8 = ?$
$40 \div 5 = ?$	$7 \times 8 = ?$	$72 \div 8 = ?$	$90 \div 10 = ?$
$40 \div ? = 5$	$56 \div 7 = ?$	$36 \div 6 = ?$	$80 \div 8 = ?$
$7 \times 8 = ?$	$56 \div 8 = ?$	$40 \div 5 = ?$	$10 \times 5 = ?$

13.	14.	15.	16.
$4 \times 5 = ?$	$7 \times 4 = ?$	$27 \div 9 = ?$	$7 \times 9 = ?$
$20 \div 4 = ?$	$9 \times 4 = ?$	$27 \div 3 = ?$	$63 \div 7 = ?$
$30 \div 6 = ?$	$40 \div 4 = ?$	$9 \times 3 = ?$	$8 \times 9 = ?$
$7 \times 5 = ?$	$4 \times 6 = ?$	$45 \div ? = 5$	$9 \times 9 = ?$
$10 \times 5 = ?$	$24 \div 4 = ?$	$40 \div ? = 5$	$90 \div 9 = ?$

Review

1. How much will 3 cakes of soap cost at 9¢ each?

2. If a man drives 9 miles an hour, how far does he drive in 5 hours?

3. How many hours would it take him to drive 36 miles?

4. If a suit of clothes costs $9, how much will 7 suits cost?

5. How many suits could be bought for $81?

6. If a can holds 9 quarts of milk, how many quarts are there in 6 cans?

7. How many cans will contain 72 quarts?

8. Margaret has 36 buttons. How many rows will there be, if she lays 9 buttons in each row?

9. How many rows would there be, if she had 45 buttons?

10. How many buttons must she have to make 9 rows with 9 buttons in each row?

11. How many 10-dollar bills will make $90?

12. If a suit of clothes costs $9, how many suits can be bought for $90?

13. How many days are there in 9 weeks?

14. How many weeks are there in 56 days?

15. If 3 pencils cost 5 cents, how much will 6 pencils cost?

16. How much will 18 pencils cost?

17. How much will 3 dozen pencils cost?

18. If ribbon costs 24 cents a yard, what will be the cost of a piece a foot long?

19. How much would $2\frac{1}{2}$ yards cost?

Add:

1.	2.	3.	4.	5.	6.
23	32	37	36	74	67
46	48	33	65	56	35
75	63	28	71	99	42
37	54	36	23	87	39

7.	8.	9.	10.	11.	12.
243	79	300	69	460	242
98	150	250	253	122	84
164	235	165	82	190	175
87	95	298	318	87	320

13.	14.	15.	16.	17.	18.
$3.42	$8.16	$10.25	$16.82	$25.00	$42.50
.85	1.27	3.50	5.26	4.00	21.30
1.62	.56	5.85	10.18	20.00	12.65
2.43	3.21	8.24	3.56	14.00	18.35

Subtract:

19.	20.	21.	22.	23.	24.
95	80	73	92	60	91
45	17	37	19	56	59

25.	26.	27.	28.	29.	30.
146	120	230	300	400	900
23	40	119	25	225	799

31.	32.	33.	34.	35.	36.
$4.85	$5.20	$5.00	$16.25	$10.00	$44.00
2.25	3.17	2.27	9.32	4.50	13.60

Sixths

1. One sixth of 12 is —.
2. Three sixths of 12 is —.
3. Five sixths of 12 is —.
4. Five sixths of 6 is —.
5. Six sixths of 12 is —.
6. 3 is one sixth of —.
7. 6 is — sixths of 18.

3 is one sixth of 18, therefore 6 is two sixths of 18.

8. Five sixths of 18 is —.
9. 12 is — sixths of 18.
10. Six sixths of 18 is —.
11. $\frac{1}{4}$ of 20 is —.
12. 15 is — fourths of 20.
13. $\frac{1}{3}$ of 18 is —.
14. 12 is — thirds of 18.
15. $\frac{2}{3}$ of 21 is —.
16. $\frac{3}{4}$ of 24 is —.
17. 6 is $\frac{1}{5}$ of —.
18. $\frac{1}{5}$ of 50 is —.
19. 30 is — fifths of 50.
20. 25 is $\frac{1}{2}$ of —.
21. 7 is $\frac{1}{6}$ of —.
22. 14 is — sixths of 42.

Reckoning Change

1. What pieces of money will make 28 cents?

2. What pieces of money will make 77 cents?

3. If I pay 87 cents with a dollar bill, what change will be returned?

4. If I pay 38 cents with a dollar bill, what change will be returned?

5. If I pay 72 cents with a 2-dollar bill, what change shall I receive?

6. How much is left after spending $2.50 from a 5-dollar bill?

7. How much is left after spending $4.25 from a 5-dollar bill?

8. What change is left after spending $12 from a 10-dollar bill and a 5-dollar bill?

9. How many 5-dollar bills are there in $100?

10. How many 10-dollar bills will make $200?

11. How many quarter dollars will make $5?

12. How many dimes will make $1.50?

13. How many 5-cent pieces will make $.75?

14. How many 5-cent pieces will make $1.25?

15. How many 5-cent pieces must be added to 5 dimes to make $.65?

16. How many dimes must be added to 5 half dollars to make $2.80?

17. How many 5-dollar bills must be added to four 10-dollar bills to make $85?

18. How many 2-dollar bills must be added to seven 5-dollar bills to make $47?

Multiplication and Division

Prove the answers correct. Read the note on page 133.

Multiply:

1.	2.	3.	4.	5.	6.
25	37	56	90	85	95
4	3	5	7	6	9

7.	8.	9.	10.	11.	12.
200	350	109	199	450	325
3	2	5	4	2	3

13.	14.	15.	16.	17.	18.
$25	$32	$80	$100	$125	$426
4	6	7	8	5	2

19.	20.	21.	22.	23.	24.
$.25	$.60	$1.25	$2.40	$1.36	$1.58
4	6	4	3	4	6

Divide:

25.	26.	27.	28.	29.	30.
8)400	6)354	5)250	7)154	4)412	9)927

31.	32.	33.	34.	35.	36.
4)$60	5)$75	8)$.64	2)$.08	4)$4.48	3)$6.15

37.	38.	39.	40.	41.
5)$25.50	3)$42.15	6)$2.52	4)$17.24	8)$1.68

Measures

See the tables on page 256.

1. How many half pints are there in a gallon?
2. Find how many half pints there are in 8 gallons.
3. How many inches are there in a yard?
4. Find how many inches there are in 9 yards.
5. How many quarts are there in a bushel?
6. How many pints are there in a bushel?
7. Find how many pints there are in 7 bushels.
8. Find how many half pints there are in 6 bushels.
9. How many inches are there in a yard?
10. Find how many inches there are in 8 yards.
11. How many half inches are there in a yard?
12. Find how many half inches there are in 7 yards.
13. How many pencils are 6 dozen pencils?
14. How many days are there in January, March, May, and July?
15. How many days are there in April, June, September, and November?
16. How many gallons are there in 12 quarts?
17. Find how many gallons there are in 336 quarts.
18. How many weeks are there in 21 days?
19. Find how many weeks there are in 364 days.
20. How many hours are there in 2 days?
21. Find how many hours there are in a week.
22. How many minutes are there in 2 hours?
23. Find how many minutes there are in a day.

Drill Table

A large number of problems for drill may be easily formed from this page. For example, add column 1 as far as *l*. In column 2 add as far as *n* and multiply by *o*. Add as far as *q*, then add from *q* to *v*, and subtract the second result from the first. Let each child take a different column and follow the same directions. The same method may be pursued horizontally. Turn back to this page frequently for review drill.

	1.	2.	3.	4.	5.	6.	7.	8.
a.	2	9	7	2	7	3	9	2
b.	3	1	2	2	4	2	9	3
c.	5	3	8	2	9	5	9	4
d.	0	6	3	2	6	4	9	5
e.	6	5	4	2	6	1	9	6
f.	8	7	6	4	8	5	8	7
g.	7	4	5	4	4	7	8	2
h.	2	3	0	4	8	3	8	3
i.	9	1	3	4	8	6	8	4
j.	5	6	9	4	5	4	8	5
k.	0	5	4	6	6	5	7	6
l.	2	2	2	6	9	5	7	7
m.	1	4	1	6	2	9	7	2
n.	3	3	8	6	9	1	7	3
o.	5	9	4	6	9	2	7	4
p.	9	0	3	5	7	8	6	5
q.	7	5	6	5	7	4	6	6
r.	4	8	5	5	6	5	6	7
s.	3	3	8	5	8	1	6	2
t.	8	2	4	8	4	3	6	3
u.	6	7	9	8	8	3	5	4
v.	5	4	3	8	6	4	5	5

(page 158)

Original Problems

Make problems and give the answers:

1. A horse goes 7 miles an hour and travels 8 hours.

2. A milkman has 12 quarts of milk in each can.

3. Mary has 56 buttons and lays them in 7 rows.

4. A man paid a bill of $80 with 10-dollar bills.

5. He bought a suit of clothes for $35 and paid for it with 5-dollar bills.

6. William sleeps 7 hours each night.

7. His father sleeps $\frac{1}{4}$ of the time.

8. Ellen went to school $\frac{1}{2}$ of the time for 4 weeks.

9. $\frac{2}{3}$ of the words of the lesson were spelled correctly.

10. $\frac{1}{6}$ of all the children in school would be 7 children.

11. $\frac{1}{6}$ of all the children in another school would be 15 children.

12. I paid 65 cents with a dollar bill.

13. I paid 83 cents with coins.

14. I paid $1.78 with a 2-dollar bill.

15. 3 barrels of flour cost $12.60.

16. Potatoes cost $.85 a bushel.

17. 7 pounds of butter cost $1.89.

18. Eggs cost 22 cents a dozen.

19. There are 24 hours in a day.

20. There are 60 minutes in an hour.

21. We have school $5\frac{1}{2}$ hours each day.

22. There are two recesses of 15 minutes each.

23. School closes at 12 o'clock and begins again at 1.30.

Review

1. How much will 6 barrels of flour cost at $4 a barrel?

2. How much will 5 barrels of flour cost at $4.25 a barrel?

3. How much will 7 yards of cloth cost at 8 cents a yard?

4. Find how much 6 yards of cloth will cost at 13 cents a yard.

5. Find how much 9 yards of cloth will cost at 21¢ a yard.

6. If a man earns $15 a week, how much will he earn in 4 weeks?

7. If a boy earns $6.50 a week, how much will he earn in 5 weeks?

8. Chester earns 17 cents an hour. How much does he earn in 9 hours?

9. If 4 barrels of flour cost $16, how much does one barrel cost?

10. If 6 barrels of flour cost $25.50, find how much one barrel costs.

11. 5 yards of cloth cost 45 cents. What is the cost of a yard?

12. If 8 yards of cloth cost $8.96, what is the cost of a yard?

13. At 18¢ a dozen how much will 7 dozen eggs cost?

14. If 8 dozen eggs cost $1.76, what is the price per dozen?

15. 8 pounds of butter cost $1.60. What is the price per pound?

16. What would be the cost of 9 pounds?

Roman Numerals

I = 1; II = 2; III = 3; IV = 4; V = 5; X = 10; L = 50; C = 100.

In Roman numbers when a number is followed by an equal number or a smaller number the two are to be added. When a number is followed by a larger number the smaller number is to be subtracted from the larger. VI = 6, but IV = 4. LX = 60, but XL = 40.

1.	2.	3.	4.
I =	IV =	XI =	XVII =
III =	IX =	XIII =	XVI =
V =	VIII =	XV =	XVIII =
II =	X =	XII =	XX =
VI =	VII =	XIV =	XIX =

5.	6.	7.	8.
XXI =	XXVI =	XXXV =	L =
XXII =	XXVIII =	XXXIV =	XL =
XXIV =	XXX =	XXXVIII =	XLV =
XXV =	XXVII =	XXXIX =	XLII =
XXIII =	XXIX =	XXXVI =	XLIX =

9. The long hand of the clock is at IX and the short hand is between V and VI. What time is it?

10. Over how many minute spaces does the hand pass in moving from VI to XI?

11. Over how many minute spaces does the hand pass in moving from V to VIII?

12. How many minutes does it take the minute hand to move from XI to V?

13. The last lesson in the reader is numbered XLIV. How many lessons are there in the book?

Add:

1.	2.	3.	4.	5.	6.
4	8	5	5	7	6
3	7	5	5	7	6
8	5	5	5	7	6
6	7	5	5	7	6
5	5	3	5	7	8
0	8	7	5	7	8
4	6	3	5	7	8
9	4	7	5	7	8
5	6	5	5	7	8

7.	8.	9.	10.	11.	12.
24	136	268	75	200	150
56	84	195	212	300	150
35	209	86	83	100	150
72	92	102	152	100	150
86	176	92	318	100	150
58	250	100	126	100	150

13.	14.	15.	16.	17.	18.
$.16	$1.50	$3.05	$12.16	$75.00	$100.00
.34	.26	4.15	10.00	16.00	253.00
.45	.38	.85	22.64	.95	56.25
.50	2.25	.25	45.80	2.45	125.50
.25	.84	2.50	36.15	12.00	30.00
.75	4.20	4.75	15.15	22.00	216.40

1. If 3 car tickets cost 15 cents, how much will 6 car tickets cost?

2. If 4 yards of cloth cost 28 cents, what will be the cost of 2 yards?

3. 6 pounds of sugar cost 36 cents. What is the cost of 3 pounds?

4. 3 quarts of peanuts cost 21 cents. How much will 9 quarts cost?

5. A pair of shoes cost $3. How much will 4 pair cost?

6. If 4 oranges cost 12 cents, how much will 5 oranges cost?

7. How much will 6 bananas cost at the rate of 2 bananas for 5 cents?

8. If an apple costs 2 cents, how many apples can be bought for 18 cents?

9. How many apples can be bought for 28 cents?

10. At 3 cents each, how many pears can be bought for 30 cents?

11. A farmer sold 7 pigs for $42. How much did he receive for each pig?

12. When milk is sold for 16 cents a gallon, how much is that for each quart?

13. If 2 quarts of milk cost 12 cents, how much will a gallon cost?

14. What part of a pound is 8 ounces?

15. If 8 ounces of cheese cost 7 cents, what is the price per pound?

16. If 2 quarts of apples cost 5 cents, how much will a peck cost at that rate?

Thousands

In writing a number whose figure for thousands is greater than 9, it is customary to separate the thousands from the hundreds by a comma. Twelve thousand, five hundred is written 12,500.

Ten hundreds make one thousand.

$$10 \times 100 = 1000.$$

1. Write in figures three thousand.
2. Write three thousand, five hundred.
3. Write two thousand, four hundred sixty.
4. Write four thousand, eight hundred seventy-five.
5. Write seven thousand, nine hundred twenty-eight.
6. Write eight thousand, forty-six.
7. Write three thousand, twenty.
8. Write one thousand, seven.
9. Write five thousand, ten.
10. Write eight thousand, three hundred two.
11. Write twelve thousand.
12. Write ten thousand.
13. Write ten thousand, four hundred.
14. Write twelve thousand, one hundred forty.
15. Write fifteen thousand, five hundred.
16. Write one hundred twenty-five thousand.
17. Write two hundred thousand.
18. Write four hundred fifty thousand.
19. Write one hundred one thousand, five hundred.
20. Write three hundred twenty-five thousand, four hundred sixty-eight.

Review

1. There are 42 desks in each room. Find how many desks there are in 8 rooms.

2. If there are 39 pupils in each room, find how many pupils there are in 9 rooms.

3. How many days would there be in 6 months, if there were 31 days in each month?

4. How many pecks are there in 4 bushels?

5. If there are 64 apples in a peck of apples, how many apples are there in 2 bushels?

6. Charles earns $8 a month. How much does he earn in a year?

7. How much does he earn in a year and a half?

8. If a man earns $35 a month, how much does he earn in 9 months?

9. 2 yards of cloth cost 84 cents. How much would one yard cost?

10. How much would 7 yards cost?

11. If 4 dozen eggs cost $.96, how much would 2 dozen cost?

12. How much would 6 dozen cost?

13. If there are 180 oranges in each box, how many are there in 4 boxes?

14. If there are 480 lemons in 2 boxes, how many are there in 8 boxes?

15. If hay costs $24 a ton, how much will 5 tons cost?

16. If 3 tons of hay cost $75, how much will 9 tons cost?

17. Find the cost of 8 tons of coal at $6.25 a ton.

18. If land costs $45 an acre, how much will 7 acres cost?

1. 45 is 5 times —.
2. 64 is 8 times —.
3. 30 is 2 times —.
4. 42 is 6 times —.
5. 28 is — times —.
6. 72 is — times —.

7. In 40 there are — 2's.
8. In 40 there are — 4's.
9. In 40 there are — 10's.
10. In 70 there are — 7's.
11. In 90 there are — 10's.
12. In 80 there are — 4's.

13. 2 is contained in 100 — times.
14. 4 is contained in 100 — times.
15. 5 is contained in 100 — times.
16. 10 is contained in 100 — times.
17. 50 is contained in 100 — times.
18. 25 is contained in 100 — times.

19. In 200 there are — 50's.
20. In 200 there are — 25's.
21. In 300 there are — 3's.
22. In 300 there are — 100's.
23. In 400 there are — 50's.
24. In 1000 there are — 100's.

Drill Work

In the first example say "twelve, twenty, twenty-five, thirty-one."

1. $4+8+8+5+6=$
2. $7+4+7+6+8=$
3. $2+9+5+7+3=$
4. $4+6+7+9+5=$
5. $9+9+8+8+7=$
6. $9+3+3+7+6=$

7. $5+7+8+9-7=$
8. $8+6-4+5-7=$
9. $9-3+6+3-5=$
10. $7+6-3+5+8=$
11. $8+8-4+9-6=$
12. $2+9+9-5-4=$

13. $10+8+10+2-5=$
14. $20+5-3+8-10=$
15. $25+10-5+20-5=$
16. $15+10-2+5-4=$
17. $40-20+10+20-10=$
18. $18+20-4+6-5=$

19. $100+50+20-10=$
20. $50+50-10+20=$
21. $200-50+30-20=$
22. $50+25+25-30=$
23. $\$150+\$100+\$50-\$100=$
24. $\$300+\$200-\$100+\$50=$

Review

1. John has been in school 45 days. How many weeks has he been in school?

2. How many boxes of berries at 8 cents a box can be bought for 72 cents?

3. If a man travels 6 miles in 2 hours, how far can he travel in 7 hours?

4. How many pints are there in 5 gallons?

5. How many days are there in 6 weeks?

6. How many hours are there in 2 days?

7. How many minutes are there in 3 hours?

8. How much will 4 pounds of meat cost at 10 cents a pound?

9. How much will 4 pounds of butter cost at 25 cents a pound?

10. How much will 2 hats cost at $.50 each?

11. If 4 pounds of butter cost $1.00, what is the price per pound?

12. Raymond bought a pair of shoes for $2.50 and a hat for $1.50. How much did both cost?

13. He paid with a 10-dollar bill. What change did he receive?

14. A man bought a horse for $200 and a carriage for $125. How much did both cost?

15. A man bought a horse for $100 and a cow for $50. He sold the horse for $125 and the cow for $60. How much did he gain in all?

16. A man bought 50 yards of cloth at 7 cents a yard. He sold 30 yards at 8 cents a yard and the remainder at 9 cents a yard. How much did he gain?

1. Add by 3's to 30.
2. Add by 4's to 40.
3. Add by 5's to 50.
4. Add by 6's to 60.
5. Add by 7's to 70.
6. Add by 8's to 80.
7. Add by 9's to 90.
8. Add by 10's to 100.
9. Add by 20's to 100.
10. Add by 25's to 100.
11. Add by 50's to 300.
12. Add by 40's to 200.
13. 3 times 4 is the same as 2 times —.
14. 4 times 5 is the same as 2 times —.
15. 6 times 4 is the same as 8 times —.
16. 4 times 9 is the same as 6 times —.
17. 3 times 12 is the same as 4 times —.
18. 4 times 12 is the same as 6 times —.
19. 3 is contained in 20 — times with — over.
20. 4 is contained in 27 — times with — over.
21. 5 is contained in 42 — times with — over.
22. 6 is contained in 35 — times with — over.
23. 7 is contained in 45 — times with — over.
24. 8 is contained in 50 — times with — over.

1. Multiply 52 by 34.

52
34
208
156
1768

We have to multiply 52 first by 4 ones and then by 3 tens. Multiplying by 4 ones we have 208. In multiplying 2 ones by 3 tens the product is 6 tens and must be placed in the column for tens and not under the 8 in the column for ones; 3 tens times 5 tens are 15 hundreds. Adding the two partial products we have the total product, 1768. When the process is understood, omit further explanation.

Multiply:

2.	3.	4.	5.	6.	7.
25	32	76	95	71	88
7	8	6	4	5	3
8.	**9.**	**10.**	**11.**	**12.**	**13.**
24	31	43	32	21	44
22	12	21	23	34	11
14.	**15.**	**16.**	**17.**	**18.**	**19.**
51	62	52	63	42	34
31	34	43	33	42	32
20.	**21.**	**22.**	**23.**	**24.**	**25.**
45	48	57	59	64	76
22	32	31	33	43	34
26.	**27.**	**28.**	**29.**	**30.**	**31.**
60	70	75	80	88	90
12	32	44	55	33	63
32.	**33.**	**34.**	**35.**	**36.**	**37.**
122	213	234	143	222	323
13	22	21	11	22	32
38.	**39.**	**40.**	**41.**	**42.**	**43.**
412	522	431	620	821	900
23	35	42	14	15	25

Original Problems

Make problems and give the answers:

1. 6 yards of cloth cost 72 cents.

2. Butter costs 27 cents a pound.

3. A milkman sells milk for 20 cents a gallon.

4. A man bought some hay for $18 a ton.

5. 2 pecks of potatoes cost 44 cents.

6. There are 24 hours in a day.

7. There are 60 minutes in an hour.

8. There are 730 days in 2 years.

9. A man bought a suit of clothes, a hat, and a pair of shoes.

10. A man bought a horse and a buggy.

11. A farmer sold a horse and 6 sheep.

12. A man bought a cow for $40 and 6 sheep for $2 each, and sold them all.

13. Edward earns $25 a month.

14. Mr. Jackson earns $18 a week.

15. There are 365 days in a year.

16. 4 bushels of wheat weigh 240 pounds.

17. 6 bushels of potatoes weigh 360 pounds.

18. A barrel of flour weighs 196 pounds.

19. In a certain orchard there are 32 rows of trees.

20. A man bought some coats for $12.37 each.

21. A man sold some potatoes for $1.75 a barrel.

Review

1. If a man earns $35 a month, find how much he earns in a year.

2. Find how much he earns in a year and 4 months.

3. Find how many days there would be in a year, if there were 31 days in each month.

4. How many days would there be in 3 years?

5. A peck of corn weighs 14 pounds. How many pounds does a bushel weigh?

6. How many pounds would 25 bushels weigh?

7. A bushel of wheat weighs 60 pounds. What is the weight of a peck of wheat?

8. What is the weight of 65 bushels of wheat?

9. How many ounces are there in 5 pounds?

10. How many ounces are there in 25 pounds?

11. How many inches are there in 36 yards?

12. How much will 45 pounds of meat cost at 23 cents a pound?

13. If 9 yards of cloth cost $1.53, what is the price of one yard?

14. How much will 40 pounds of butter cost at 28 cents a pound?

15. In an orchard there are 26 rows of trees and 34 trees in each row. How many trees are there?

16. There are 25 lines of children in the yard and 25 children in each line. How many children are there?

17. If 98 pounds of cocoons will produce a pound of raw silk, how many pounds of cocoons will it take to produce 25 pounds of raw silk?

Add:

1.	2.	3.	4.
1242	936	5210	860
364	2100	3160	980
2163	3025	985	2300
8521	869	4120	800
442	1000	299	7599

Subtract:

5.	6.	7.	8.
4528	3437	12,460	25,800
416	1242	5,235	12,450

9. Add: three thousand, four hundred twenty; two thousand, one hundred; nine hundred seventy-five.

10. Add: four thousand, seven hundred; six thousand, seventy-six; seven hundred fifty; four hundred five.

11. Add: eight thousand, twenty; three thousand, eight; twelve thousand, seventy-six.

12. Add: five hundred seventy-five; four thousand, one hundred six; ten thousand, five hundred; fifteen thousand nineteen.

13. From nine thousand, six hundred seventy-six take five thousand, two hundred thirty.

14. From ten thousand, eight hundred sixty take four thousand, three hundred eighty-five.

15. From twenty-four thousand, two hundred take fifteen thousand, one hundred forty.

16. From eighteen thousand take six thousand, one hundred twenty.

Give the number of days in each of the months. See page 129.

1. The first day of June was Sunday. The fourth day of June was —.

2. The eighth day of June was —.

3. The fifteenth day of June was —.

4. In January there are — days.

5. When the 30th day of January is Tuesday, the first day of February is —.

6. When the 10th day of March is Friday, the next Monday is the — day of March.

7. When the first day of July is Wednesday, the next Sunday is the — day of July.

8. When the first day of July is Wednesday, the 6th day of July is —.

9. In a month which has 30 days there are — weeks with — days over.

10. In a month which has 31 days there are — weeks with — days over.

11. In 2 months of 30 days each there are — weeks and — days.

12. In 2 months of 31 days each there are — weeks and — days.

13. In a month which has 30 days and another month which has 31 days there are — weeks and — days.

14. In a year when February has 28 days there are — weeks and — days.

15. In a year when February has 29 days there are — weeks and — days.

United States Money

Prove the answers.

Add:

1.	2.	3.	4.
$123.60	$ 92.35	$425.00	$212.13
45.25	160.15	116.10	64.00
236.00	9.18	37.96	8.05
65.83	27.00	111.20	27.53
12.90	8.25	80.09	346.70
517.16	243.00	312.42	72.45

Subtract:

5.	6.	7.	8.
$432.46	$386.50	$750.50	$552.00
125.24	94.25	360.40	48.34

9.	10.	11.	12.
$2150.64	$3246.18	$1095.40	$5600.50
1040.41	152.24	346.35	1220.25

Multiply:

13.	14.	15.	16.
$15.28	$17.32	$35.10	$42.75
8	12	23	43

17.	18.	19.	20.
$118.23	$219.56	$1500	$2150.50
21	33	74	46

Divide:

21.	22.	23.	24.
4)$315.76	5)$476.50	6)$1243.26	7)$2386.30

Problems

1. A piece of cloth contained 47 yards, but one piece of 12 yards and another piece of 16 yards were sold. How many yards remained?

2. A milkman has 14 cans which contain 5 gallons each and 16 cans which contain 4 gallons each. How many gallons do all the cans contain?

3. A lady sold 17 dozen eggs at the store at 18¢ a dozen. How much did she receive?

4. If she had taken her pay in sugar at 6¢ a pound, how many pounds would she have received?

5. A farmer sold three bushels of apples at 20¢ a peck and took his pay in meat at 6¢ a pound. How many pounds did he receive?

6. There are in school 92 pupils of the 8th grade. In the first class there are 21, in the second class 19, and in the third class 25. How many are there in the fourth class?

7. A barrel contained at first 30 gallons of oil. 12 gallons were sold to one man and 15 gallons to another, and there was no oil left. How many gallons had leaked out?

8. Jennie had a dollar bill and bought a book for 35 cents and 3 pads at 8 cents each. How much money had she left?

9. A very large shad weighs 12 pounds. How many ounces does it weigh?

10. How many ounces does a trout weigh, if it weighs $4\frac{1}{2}$ pounds?

11. If there are 250 kernels of corn on one ear, how many kernels are there on 36 ears of the same size?

Review

1. How many quarts are there in $\frac{1}{4}$ of a peck?
2. How many pints are there in $\frac{1}{2}$ of a peck?
3. How many quarts are there in half a bushel?
4. How many quarts are there in $\frac{1}{8}$ of a bushel?
5. How many pints are there in $\frac{3}{8}$ of a gallon?
6. How many quarts are there in $\frac{1}{4}$ of 2 gallons?
7. 3 inches are what part of a foot?
8. 9 inches are what part of a foot?
9. 4 inches are what part of a foot?
10. 8 inches are what part of a foot?
11. 2 feet are what part of a yard?
12. $1\frac{1}{2}$ feet are what part of a yard?
13. A man had a journey of 10 miles to walk. When he had walked 2 miles what part of the journey had he walked?
14. When he had walked 6 miles what part of the journey remained?
15. There are 20 problems in the arithmetic lesson. $\frac{1}{2}$ of the problems would be how many problems?
16. $\frac{1}{4}$ of the problems would be how many problems?
17. After 5 of the problems have been solved what part of them remain?
18. What part of the problems in the lesson would 4 problems be?
19. What part of the problems would 8 problems be?
20. After 16 of the problems have been solved what part of them remain?

Drill Table

1.	2.	3.	4.
$2 \times 10 =$	$10 \times 4 =$	$2 \times 9 =$	$3 \times 9 =$
$3 \times 10 =$	$10 \times 5 =$	$5 \times 9 =$	$7 \times 9 =$
$6 \times 10 =$	$10 \times 7 =$	$6 \times 9 =$	$8 \times 9 =$
$9 \times 10 =$	$10 \times 8 =$	$3 \times 9 =$	$10 \times 9 =$
$10 \times 10 =$	$10 \times 10 =$	$4 \times 9 =$	$9 \times 9 =$

5.	6.	7.	8.
$4 \times 7 =$	$5 \times 7 =$	$4 \times 8 =$	$7 \times 5 =$
$7 \times 4 =$	$5 \times 8 =$	$7 \times 8 =$	$8 \times 7 =$
$6 \times 7 =$	$6 \times 6 =$	$7 \times 7 =$	$6 \times 8 =$
$8 \times 5 =$	$8 \times 6 =$	$8 \times 8 =$	$9 \times 7 =$
$3 \times 8 =$	$9 \times 7 =$	$7 \times 6 =$	$9 \times 8 =$

9.	10.	11.	12.
$30 \div 10 =$	$40 \div 4 =$	$49 \div 7 =$	$56 \div 8 =$
$30 \div 3 =$	$70 \div 10 =$	$42 \div 6 =$	$56 \div 7 =$
$50 \div 10 =$	$100 \div 10 =$	$45 \div 5 =$	$30 \div 5 =$
$60 \div 6 =$	$81 \div 9 =$	$63 \div 9 =$	$36 \div 6 =$
$90 \div 10 =$	$72 \div 9 =$	$64 \div 8 =$	$48 \div 8 =$

13.	14.	15.	16.
$0 \times 8 = ?$	$9 \times 5 = ?$	$? \times 6 = 30$	$54 \div ? = 6$
$90 \div 10 = ?$	$5 \times ? = 45$	$7 \times ? = 42$	$? \div 4 = 3$
$70 \div ? = 7$	$10 \times ? = 100$	$9 \times ? = 27$	$? \div 5 = 4$
$70 \div ? = 10$	$81 \div ? = 9$	$? \times 5 = 40$	$40 \div ? = 10$
$60 \div 10 = ?$	$63 \div 7 = ?$	$8 \times ? = 32$	$? \div 10 = 10$

1. What is the amount of a dollar bill, a half dollar, 3 dimes, and a five-cent piece?

2. What is the amount of a two-dollar bill, 3 quarter dollars, a dime, and 2 cents?

3. Find the sum of a five-dollar bill, 2 two-dollar bills, 5 quarter dollars, and 3 five-cent pieces.

4. Find the sum of 5 quarter dollars, 4 dimes, 6 five-cent pieces, and 4 cents.

5. What is the difference between a two-dollar bill and 24 five-cent pieces?

6. What is the difference between 5 dollars and 14 quarter dollars?

7. How many five-cent pieces are there in a two-dollar roll of five-cent pieces?

8. How many ten-cent pieces are there in a five-dollar roll of ten-cent pieces?

9. How many quarter dollars are there in a ten-dollar roll of quarter dollars?

10. What pieces of money may be given with a half dollar and 2 dimes in changing a dollar bill?

11. What pieces of money may be given with a two-dollar bill and 3 quarter dollars in changing a five-dollar bill?

12. What change will be given in taking $8.60 from a ten-dollar bill?

13. What change will be given in taking $3.42 from a 5-dollar bill?

14. What change will be given in taking $11.75 from a 20-dollar bill?

Problems

1. How many minutes are there in half an hour?

2. What part of an hour are 15 minutes?

3. What part of an hour are 20 minutes?

4. If a boy walks 3 miles in an hour, how far does he walk in 20 minutes?

5. How far does he walk in 40 minutes?

6. If a horse travels 8 miles an hour, how far does he travel in 15 minutes?

7. In how many minutes does he travel 6 miles?

8. How many minutes are there in $\frac{1}{5}$ of an hour?

9. If a train goes 25 miles an hour, how far does it go in $\frac{1}{5}$ of an hour?

10. How long does it take the train to go 15 miles?

11. How many minutes are there in $\frac{1}{6}$ of an hour?

12. If a boy rides on his bicycle a mile in 10 minutes, how many miles will he ride in an hour?

13. How many miles will he ride in 40 minutes?

14. How long will it take him to ride 5 miles?

15. How many minutes are there in $\frac{1}{10}$ of an hour?

16. If a man rides 10 miles an hour, how far does he ride in 12 minutes?

17. How far does he ride in 18 minutes?

18. How far does he ride in 36 minutes?

19. If I can ride 15 miles in an hour, how far can I ride in 20 minutes?

20. How many minutes would it take to ride 10 miles at that rate?

Multiply:

1.	2.	3.	4.	5.
2156	3090	4560	5899	7008
25	54	37	44	89

6.	7.	8.	9.	10.
4200	8000	2590	9253	5632
37	22	55	66	78

11.	12.	13.	14.	15.
1200	5000	8004	1809	1001
99	65	98	15	11

Divide:

16.	17.	18.	19.	20.
3)744	5)1180	4)652	6)1944	7)2975

21.	22.	23.	24.	25.
4)852	6)690	8)1688	5)2480	2)1124

26.	27.	28.	29.	30.
2)843	3)374	6)855	4)5827	7)856

31.	32.	33.	34.	35.
5)8260	4)3247	8)970	9)8320	6)1248

36.	37.	38.	39.	40.
7)4256	5)3014	4)5612	6)7010	9)5180

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Odd and Even Numbers

All the numbers which may be obtained by counting by 2's from 0 are called **even numbers**. All the other numbers are called **odd numbers**.

1. Name all the even numbers from 2 to 20.

2. Name all the odd numbers from 1 to 20.

3. Name the even numbers from 20 to 40.

4. Name the odd numbers from 21 to 41.

5. Name all the numbers from 40 to 60 which can be exactly divided by 2.

6. Name all the numbers from 40 to 60 which cannot be exactly divided by 2.

7. Name all the numbers to 20 which can be exactly divided by 3.

8. Name all the numbers to 20 which cannot be exactly divided by 3.

9. Name all the numbers below 30 which are divisible by 4.

10. Name all the numbers below 50 which are divisible by 5.

11. Give the odd numbers from 45 to 60.

12. Give the even numbers from 80 to 100.

13. Count by 6's from 60 to 100.

14. Count by 7's from 70 to 100.

15. Count by 8's from 80 to 100.

16. Count backwards by 5's from 100.

17. Count backwards by 6's from 84.

18. Count backwards by 7's from 70.

Original Problems

Make problems and give the answers:

1. In a certain year the first day of March was Tuesday.

2. The Fourth of July of one year was Friday.

3. A dealer had a piece of cloth containing 52 yards, but sold two pieces from it.

4. A man sold some eggs at the store and bought some sugar.

5. A farmer sold some potatoes at 85 cents a bushel and took his pay in cloth at 8 cents a yard.

6. A farmer had 200 sheep and sold some to one man and some to another.

7. A boy had a two-dollar bill and bought some butter and eggs.

8. I sold 10 quarts of berries and received sugar for my pay.

9. $\frac{2}{3}$ of Henry's marbles would be 9 marbles.

10. After spending $\frac{4}{5}$ of my money I had 12 cents left.

11. A boy had 12 papers and sold 4 of them.

12. A boy lost $\frac{2}{5}$ of his marbles and had 6 marbles left.

13. A man deposited some money in the bank at four different times.

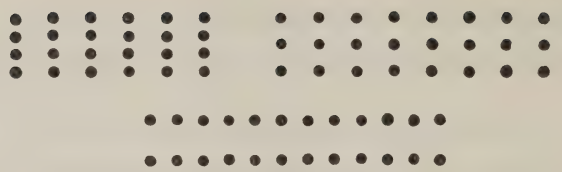
14. A lady had some money in the bank and took out a part of it.

15. A dealer sold some potatoes for $1.65 a barrel.

16. A man bought some eggs at 20 cents a dozen and some berries at 8 cents a box.

17. A boy rides 2 miles in 20 minutes.

18. I can ride 12 miles in an hour.



1. In what different ways may 24 buttons be arranged in rows so as to have the same number in each row?

2. 6 times 4 is the same as 3 times —.

3. 6 times 4 is the same as 2 times —.

4. In what different ways may 36 children be arranged in rows so as to have the same number of children in each row?

5. 2 times 14 equals 4 times —.

6. 2 times 15 equals — times —.

7. In what different ways may 40 men be arranged in equal rows?

8. 5 times 8 equals 2 times —.

9. 44 children are standing in 4 rows. In what other ways might they be arranged in equal rows?

10. An orchard has 6 rows of trees with 8 trees in each row. Another orchard has the same number of trees, but has 12 trees in a row. How many rows are there?

11. 4 times 15 equals 6 times —.

12. 4 times 16 equals — times 8.

13. Give the different ways in which 80 children may be arranged in equal rows.

14. Give the different ways in which 100 children may be arranged in equal rows.

Add:

1.	2.	3.	4.	5.
24	25	64	20	15
36	25	21	20	15
42	25	83	20	15
32	25	90	30	15
75	50	25	70	15
18	50	34	50	15
24	50	22	20	15
25	50	77	20	15

6.	7.	8.	9.	10.
125	452	125	500	310
360	372	325	300	205
455	502	450	400	425
526	732	225	200	110
434	182	750	700	850
245	222	525	900	900

11.	12.	13.	14.	15.
$16.00	$42.37	$243.00	$450.10	$443.19
24.50	15.73	96.00	228.10	564.17
9.25	10.45	175.75	76.20	92.37
12.25	9.65	64.75	115.10	175.64
26.50	56.34	185.50	580.35	73.75
84.00	65.76	95.00	775.40	318.24

16.	17.	18.	19.	20.
$12.00	$32.50	$116.15	$268.75	$500.00
9.56	81.00	43.08	113.11	319.75
18.42	8.53	94.52	84.38	84.36
24.30	29.05	218.16	214.42	185.25
31.00	17.62	57.83	618.00	94.13
19.25	31.20	100.00	150.72	731.18

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Writing and Reading Numbers

Write the following numbers in figures:

1. Three hundred eight.
2. One thousand, twenty-five.
3. Four thousand, thirty.
4. Seven thousand, six hundred.
5. Eight thousand, nine.
6. Twelve thousand.

7. One thousand, three hundred.
8. Ten thousand, three hundred.
9. Ten thousand, fifty.
10. Twenty thousand, two hundred five.
11. Two thousand, thirty-five.
12. Sixty thousand, sixty.

13. One hundred thousand.
14. Two hundred five thousand.
15. Three hundred twenty thousand.
16. Four hundred sixty thousand, fifty.
17. Seven hundred thousand, seven hundred.
18. Eight hundred thousand, twenty-four.

Read these numbers:

19.	20.	21.	22.
8040	13,130	15,000	200,000
5400	21,021	150,000	240,400
1006	10,000	18,020	305,050
12,000	10,500	20,302	500,500

Roman Numerals

Review page 161.

1.	2.	3.
L =	LXXIII =	LXVII =
LX =	LXXX =	LXXIX =
LXX =	LXIV =	LXXXV =
LXI =	LXXV =	LXXVII =

4.	5.	6.
C =	XCIV =	XLIV =
XC =	XCVII =	XCIX =
XCII =	XLIII =	XLVI =
XCV =	XLIX =	LXIX =

7.	8.	9.
CIII =	CXL =	CC =
CVI =	CIX =	CCL =
CXI =	CXIV =	CCXX =
CXV =	CXXI =	CCLI =

Write these numbers in the Roman form:

10.	11.	12.	13.	14.
3	10	19	56	100
4	12	20	60	250
5	14	30	85	340
7	15	44	90	390
9	18	50	99	425

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Problems

1. How far is it around a 7-inch square?

2. What is the distance around an oblong that is 10 inches long and 3 inches wide?

3. A box is 18 inches wide and 6 inches high. How long must a string be to reach around it?

4. If the box is 12 inches long, how long must a string be to reach around it the long way?

5. A boy sold his knife for 10 cents less than he paid for it and received 25 cents. How much did he pay for it?

6. A man sold a cow at a gain of $5. He received $45. How much did the cow cost him?

7. He paid $100 for a horse and sold him at a loss of $20. For how much did he sell him?

8. Charles has 8 cents and Fred has 12 cents. If Charles should give Fred 3 cents, how many more cents would Fred have than Charles?

9. Fred would have how many times as many cents as Charles?

10. If Fred should give Charles $\frac{1}{3}$ of his cents, how many more would Charles have than Fred?

11. A boy had 16 plums and ate $\frac{1}{4}$ of them. How many had he left?

12. I had 18 cents and spent all except $\frac{1}{3}$ of them. How many had I left?

13. How many cents did I spend?

14. $\frac{1}{5}$ of the money that I have is $8. How much have I?

15. What part of my money is $16?

16. What part of my money is $32?

1. Multiply 243 by 200.

243
200
48,600

In multiplying 3 by 2 hundreds the product is 6 hundreds. The six must be written in the place for hundreds. The ciphers occupy the places for ones and tens.

Multiply:

2.	3.	4.	5.	6.
25	46	84	365	570
10	20	40	50	70

7.	8.	9.	10.	11.
175	504	109	400	800
30	60	80	10	90

12.	13.	14.	15.	16.
324	564	190	120	100
100	300	200	500	100

Divide:

17.	18.	19.	20.	21.
4)564	3)525	5)740	7)1547	6)1470

22.	23.	24.	25.	26.
5)510	4)1204	8)2416	3)9012	7)7021

27.	28.	29.	30.	31.
2)1537	4)5063	6)1029	5)1507	9)2795

32.	33.	34.	35.	36.
3)12345	4)3254	5)1000	7)1500	8)2100

37.	38.	39.	40.	41.
5)21,386	6)51,400	7)13,581	8)92,613	9)84,919

(page 189)

Compound Quantities

See page 256.

1. 5 quarts and 1 pint = — pints.
2. 3 gallons = — pints.
3. 3 pecks and 5 quarts = — quarts.
4. 5 yards and 2 feet = — feet.
5. 2 yards and 5 inches = — inches.
6. 1 foot and 2 inches = — half-inches.

7. 2 pounds and 3 ounces = — ounces.
8. 3 pounds = — half-ounces.
9. 23 quarts = — gallons and — quarts.
10. 38 inches = — feet and — inches.
11. 4 years and 3 months = — months.
12. 29 days = — weeks and — days.

13. In an hour there are — minutes.
14. In 2 hours and a half there are — minutes.
15. In 5 hours there are — minutes.
16. In 80 minutes there are one hour and — minutes.
17. In $1\frac{1}{4}$ hours there are — minutes.
18. In a day there are — minutes.

19. In 150 feet there are — yards.
20. In 182 feet there are — yards and — feet.
21. In 100 pounds there are — ounces.
22. In 160 ounces there are — pounds.
23. In 100 bushels there are — quarts.
24. In 200 quarts there are — pecks.

Review

1. How much will $\frac{2}{3}$ of a yard of cloth cost at 9¢ a yard?

2. If $\frac{1}{3}$ of a yard of cloth costs 8 cents, what is the price per yard?

3. If half a peck of apples costs 20 cents, how much does a peck cost?

4. How much does a bushel cost?

5. How many 2's are there in 10?

6. How many 20's are there in 100?

7. How many 5's are there in 100?

8. If 4 pounds of sugar cost 20 cents, how much does a pound cost?

9. How many pounds can I buy for 25 cents?

10. How many pounds can I buy for a dollar?

11. 3 is what part of 12?

12. 9 is what part of 12?

13. When eggs cost 24 cents a dozen, how much will 3 eggs cost?

14. How much will 9 eggs cost?

15. If a boy earns 80 cents in 8 hours, how much does he earn in one hour?

16. How much does he earn in 5 hours?

17. If a man earns 30 dollars in 6 days, how much does he earn in 2 days?

18. A man sold $\frac{1}{3}$ of a house lot for $80. How much was the whole lot worth at the same rate?

19. If $\frac{1}{5}$ of a farm is worth $1525, how much is the whole farm worth at the same rate?

Review

1. Add 2456, 942, 8060, and 11,800.
2. Add $25.80, $374, $850.75, and $96.
3. Subtract 2450 from 8910.
4. Subtract 175 from 2500.
5. Multiply 345 by 75.
6. Multiply $28.40 by 36.
7. Divide 496 by 4.
8. Divide 1350 by 7.

9. Find the sum of 9500, 800, and 10,000.
10. Find the sum of $5.60, $50.25, and $100.
11. Find the difference between 1200 and 980.
12. Find the difference between $510 and $412.50.
13. Find the product of 2090 and 98.
14. Find the product of 648 and 50.
15. Find the quotient of 3900 and 3.
16. Find the quotient of 1000 and 6.

17. Add 1500, 22,300, and 109,000.
18. From 1000 take 200.
19. Find 10 times 400.
20. What is one eighth of $12,000?
21. How much is $16.25, $.85, and $10.32?
22. Take 398 from 5100.
23. What is 200 times 200?
24. Find $\frac{1}{9}$ of 1980.

Review

1. Find the sum of 25,140, 116,175, and 9008.

2. From the sum of 245,710 and 16,000 take 98,189.

3. To the difference between 75,160 and 216,108 add 100,000.

4. From the sum of 80,900 and 15,102 take the sum of 25,120 and 17,095.

5. A farmer bought 135 sheep at one time and 216 at another time. He afterwards sold 228. How many had he left?

6. A boy had at first 93 chickens. He sold 27 to one man and 31 to another. He afterwards bought 45. How many had he then?

7. There are 37 children in the first room, 42 in the second, 39 in the third, and 46 in the fourth. There are 74 boys in the four rooms. How many girls are there?

8. How many days are there in the months of July, August, September, and October?

9. How many days are there in the first five months of a year which is not leap year?

10. During the months of November and December Clara attended school 34 days. How many days did she stay at home?

11. Mr. Kendrick received for goods sold on Monday $27.15, $10.43, $17.85, and $124.13. He expended $42.36 and $85.38. How much did he receive more than he expended?

12. I have deposited in the bank $250, $148.35, $75, and $317.80. I have withdrawn $118.64, $210, and $53.12. How much money have I left in the bank?

Billions	Hundred-millions	Ten-millions	Millions	Hundred-thousands	Ten-thousands	Thousands	Hundreds	Tens	Units
3	, 6	1	2	, 3	4	7	, 5	2	6

Read these numbers:

1.	2.	3.	4.
10,500	100,000	1,500,000	100,000,000
124,015	100,100	7,025,000	150,200,000
9090	1,000,000	12,200,000	375,025,000
80,100	5,000,000	9,000,800	26,142,200
250,500	20,000,000	4,007,000	483,574,356

Write the following in figures:

5. Four thousand, fifty.
6. Two hundred eight thousand, twenty.
7. Seventy-five thousand, two hundred.
8. One hundred thousand, one hundred ten.
9. Two hundred one thousand, three hundred.
10. Three million.
11. Two million, four hundred thousand.
12. Sixty-five million, two hundred.
13. Three million, twenty-seven thousand.
14. Twenty million, two hundred thousand, two hundred.
15. Eight hundred million.
16. One hundred four million, three thousand.
17. Eighteen million, seventeen thousand.

Original Problems

Make problems and give the answers:

1. Herbert has 45 cents to arrange in rows.

2. An orchard contains 48 trees.

3. There are 4 rows of children with 25 in each row. The teacher wishes to arrange them so as to have a larger number of rows.

4. A box is 15 inches long, 10 inches wide, and 6 inches high.

5. A man sold a cow for $12 more than he paid for her.

6. Mr. Jones bought a horse and sold him at a loss.

7. William has 15 marbles and Fred has 9.

8. A boy had 18 peanuts and ate $\frac{1}{3}$ of them.

9. The train left Boston at 10.30 A.M. and reached New York at 4.45 P.M.

10. The train left New York at 11.15 P.M. and reached Philadelphia in 2 hours and 25 minutes.

11. A fruit dealer sells apples at the rate of 3 for 5 cents.

12. A farmer bought 2 flocks of sheep and then sold a part of them.

13. The vacation commenced June 29th and ended September 9th.

14. June began on Friday.

15. August began on Thursday.

16. A man received three sums of money and expended two sums.

Problems

1. Albert bought a knife and sold it so as to gain $\frac{1}{5}$ as much as it cost. How much did he receive for it?

2. A fruit dealer bought some oranges for 15 cents a dozen and sold them for 2 cents each. How much did he gain on each dozen?

3. How much did he gain on 8 dozen?

4. A man bought 7 bushels of potatoes at 65 cents a bushel. How much did they cost?

5. He sold them for 20 cents a peck. How much did he receive for them?

6. How much did he gain on the 7 bushels?

7. He bought 3 bushels of apples for $1.25 and sold them for 15 cents a peck. What was his profit?

8. A grocer bought 10 pounds of raisins at 6 cents a pound. He sold 7 pounds at 8 cents a pound and the remainder at 5 cents a pound. How much did he gain on the whole?

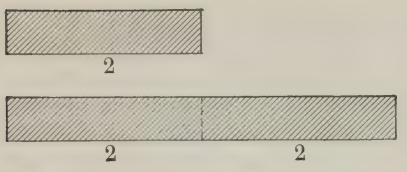
9. If I should buy a piece of cloth containing 54 yards at 10 cents a yard, and should sell $\frac{1}{2}$ of it at 12 cents a yard and the remainder at 9 cents a yard, how much should I gain?

10. A man bought two horses for $100 each. He sold one for $90 and the other for $125. How much did he gain?

11. If I should buy three cows for $40 each, and should sell two of them for $35 each and the other for $45, how much should I gain or lose?

12. I bought two house lots for $1000 each. I sold one of them for $850 and the other for $1325. How much did I gain?

Mental Problems



It will assist greatly, in solving mental problems like these, to think of the unknown numbers as quantities, as suggested by the diagram.

Make lines or oblongs in this way for each of the problems until you have become accustomed to the process.

1. The sum of two numbers is 6 and one of the numbers is twice as large as the other. What are the numbers?

2. The sum of two numbers is 4 and one of the numbers is three times the other. What are the numbers?

3. The difference between two numbers is 3 and the smaller number is 5. What is the larger number?

4. The difference between two numbers is 6 and the larger number is 10. What is the smaller number?

5. A man had 12 apples and gave them to two boys. He gave the first boy two apples as often as he gave the second boy one apple. How many apples did each boy receive?

6. Mary had 20 cents. She put 2 cents in one pile as often as she put 3 cents in another pile. How many cents did she have in each pile?

7. If an orange costs twice as much as an apple and an orange costs 4 cents, what will be the cost of an orange and an apple?

8. What will be the cost of 3 oranges and 3 apples?

9. The sum of two numbers is 7 and one number is 3 more than the other. What are the numbers?

1. Multiply 243 by 132.

243
132
486
729
243
32,076

We have to multiply 243 by 2 ones, 3 tens, and 1 hundred. 3 tens times 3 ones are 9 tens. The 9 must be placed in the column for tens. 1 hundred times 3 ones are 3 hundreds. The 3 must be placed in the column for hundreds.

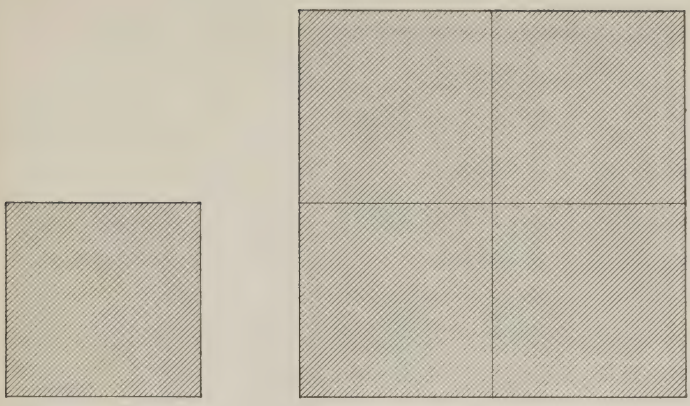
Multiply:

2.	**3.**	**4.**	**5.**	**6.**
243	313	342	456	809
121	232	114	215	245
7.	**8.**	**9.**	**10.**	**11.**
456	517	907	850	627
324	246	617	236	135
12.	**13.**	**14.**	**15.**	**16.**
843	749	675	861	972
108	281	320	510	400
17.	**18.**	**19.**	**20.**	**21.**
1250	3408	4510	5637	1230
122	236	308	200	500

Divide:

22.	**23.**	**24.**	**25.**	**26.**
5)245	7)3654	6)1320	4)9576	8)7472
27.	**28.**	**29.**	**30.**	**31.**
4)1578	5)3819	9)3742	3)1807	6)7185
32.	**33.**	**34.**	**35.**	**36.**
3)15,000	5)20,000	6)1000	8)40,000	9)10,000

Square Inches



Square Inch

A square surface that is an inch long and an inch wide is called a **square inch.**

1. How many square inches will make a square 2 inches long?

2. How many square inches will make a square 3 inches long?

3. How many inches is it around a square inch?

4. How many inches is it around a 2-inch square?

5. How many square inches are there in a 3-inch square?

6. How many inches is it around a 3-inch square?

7. How many square inches are there on the top of a box which is 4 inches square?

8. How far is it around the top of the box?

9. If a box is 4 inches long, 4 inches wide, and 4 inches high, how many square inches are there on the top, the bottom, and the four sides?

Review

1. How much is $\frac{1}{4}$ of 2580?
2. Find $\frac{3}{4}$ of 1360.
3. How much is $\frac{1}{5}$ of 2000?
4. Find $\frac{4}{5}$ of 3500.
5. How much is $\frac{1}{8}$ of 9600?
6. Find $\frac{5}{8}$ of 16,000.

7. How much is $\frac{1}{2}$ of 40 and $\frac{1}{4}$ of 40?
8. How much is $\frac{1}{3}$ of 30 and $\frac{1}{2}$ of 30?
9. How much is $\frac{1}{2}$ of 24 less $\frac{1}{3}$ of 24?
10. How much is $\frac{1}{4}$ of 40 less $\frac{1}{5}$ of 40?
11. How much is $\frac{2}{3}$ of 18 less $\frac{1}{2}$ of 18?
12. How much is $\frac{3}{4}$ of 24 less $\frac{2}{3}$ of 24?

13. A boy sold $\frac{3}{4}$ of his papers and had 7 papers left. How many had he at first?

He had $\frac{1}{4}$ of his papers left. 7 is $\frac{1}{4}$ of what number?

14. I spent $\frac{1}{4}$ of my money and had \$12 left. How much had I at first?

15. A boy sold $\frac{2}{3}$ of his papers and had 5 papers left. How many had he at first?

16. A man had 40 sheep. He sold $\frac{1}{2}$ of them at \$4 each, $\frac{1}{4}$ of them at \$3.50 each, and the remainder at \$3 each. How much did he receive for them all?

17. A man bought 30 boxes of berries at 8 cents a box. He sold $\frac{2}{5}$ of them at 10 cents a box and the remainder at 12 cents a box. How much did he gain?

Drill Work

1. There are — 5's in 45.
2. There are — 8's in 80.
3. There are — 9's in 63.
4. There are — 10's in 70.
5. There are — 11's in 66.
6. There are — 6's in 66.
7. 5 is contained in 50 — times.
8. 6 is contained in 54 — times.
9. 9 is contained in 81 — times.
10. 10 is contained in 90 — times.
11. 11 is contained in 77 — times.
12. 11 is contained in 99 — times.

13.	14.	15.	16.
$2 \times 11 = ?$	$6 \times 11 = ?$	$4 \times 10 = ?$	$7 \times 8 = ?$
$4 \times 11 = ?$	$8 \times 11 = ?$	$7 \times 10 = ?$	$9 \times 7 = ?$
$5 \times 11 = ?$	$9 \times 11 = ?$	$7 \times 9 = ?$	$6 \times 9 = ?$
$7 \times 11 = ?$	$10 \times 11 = ?$	$8 \times 9 = ?$	$8 \times 6 = ?$
$3 \times 11 = ?$	$11 \times 10 = ?$	$8 \times 8 = ?$	$7 \times 7 = ?$

17.	18.	19.	20.
$44 \div 4 = ?$	$81 \div 9 = ?$	$7 \times ? = 42$	$28 \div ? = 7$
$44 \div 11 = ?$	$72 \div 8 = ?$	$8 \times ? = 64$	$40 \div ? = 5$
$80 \div 10 = ?$	$56 \div 7 = ?$	$6 \times ? = 54$	$48 \div ? = 8$
$80 \div 8 = ?$	$54 \div 6 = ?$	$8 \times ? = 72$	$55 \div ? = 11$
$99 \div 11 = ?$	$60 \div 10 = ?$	$9 \times ? = 45$	$88 \div ? = 8$

1. What pieces of money will make 64 cents?

2. What pieces of money will make 99 cents?

3. If I pay $2.87 with a 5-dollar bill, what change shall I receive?

4. I bought 5 pounds of meat at 16 cents a pound and 2 dozen eggs at 23 cents a dozen, and paid for them with a 2-dollar bill. What change did I receive?

5. If 2 tons of hay cost $40, how much will 6 tons cost?

6. If a man can earn $7 in 2 days, how much can he earn in 4 days?

7. At the rate of 2 oranges for 5 cents, how many oranges can I buy for 25 cents?

8. If a pint of vinegar costs 4 cents, how much will a gallon cost?

9. How many quarts are there in $2\frac{1}{2}$ gallons?

10. How many quarts are 3 pecks and 5 quarts?

11. How many eggs are 4 dozen and 3 eggs?

12. A man bought $3\frac{1}{2}$ dozen eggs at 14 cents a dozen and sold them at 20 cents a dozen. What was his profit?

13. How many inches are there in $1\frac{3}{4}$ feet?

14. How many inches make $2\frac{1}{2}$ feet?

15. How many inches are 7 feet and 5 inches?

16. How many feet are there in 30 inches?

17. How many feet are there in 48 inches?

18. How many ounces are there in 5 pounds?

19. How many ounces are there in $2\frac{1}{2}$ pounds?

20. How many half-ounces are there in 2 pounds?

1. Divide 288 by 12.

$$\begin{array}{r} 24 \\ 12\overline{)288} \\ \underline{24} \\ 48 \\ \underline{48} \end{array}$$

12 is contained in 28 tens 2 tens times with 4 tens remaining. 4 tens and 8 ones are forty-eight. 12 is contained in forty-eight 4 times.

Multiply:

2.	3.	4.	5.
1250	3108	6234	9034
231	347	453	364
6.	**7.**	**8.**	**9.**
3009	5600	9000	8765
305	187	249	700
10.	**11.**	**12.**	**13.**
$125.30	$75.89	$853.25	$1234.20
243	250	475	321

Divide:

14.	15.	16.	17.
10)230	10)4520	11)341	11)4686
18.	**19.**	**20.**	**21.**
10)2780	11)6842	10)5831	11)4798
22.	**23.**	**24.**	**25.**
12)288	12)3864	13)286	13)1586
26.	**27.**	**28.**	**29.**
12)300	13)559	14)294	15)1665

Review

1. Count by 5's to 50.
2. Add 5's from 3 to 33.
3. Count by 6's to 48.
4. Add 6's from 1 to 31.
5. Count by 8's to 56.
6. Add 8's from 3 to 43.
7. Add 10's from 5 to 105.
8. Count by 11's to 110.
9. Add 10's from 11 to 51.
10. Subtract 5's from 40 to 0.
11. Subtract 10's from 56 to 6.
12. Subtract 11's from 99 to 0.
13. How many 8's are there in 24?
14. If 8 marbles cost 2 cents, how much will 24 marbles cost?
15. How many 9's are there in 36?
16. If 9 apples cost 6 cents, how much will 36 apples cost?
17. If a man earns $7 in 5 days, how many dollars will he earn in 10 days?
18. If 10 bushels of apples cost $4, how much will 40 bushels cost?
19. From seven dollars and twenty-five cents take four dollars and thirty-eight cents.
20. From ten dollars take six dollars and fifty-nine cents.
21. From fifteen dollars and 10 cents take four dollars and fifty cents.

1. What is the cost of 10 pounds of sugar at 6 cents a pound, 2 pounds of crackers at 8 cents a pound, and 3 quarts of milk at 6 cents a quart?

2. Find the amount of 8 yards of cloth at 15¢ a yard, 4 spools of thread at 5¢ each, and 5 yards of lining at 11¢ a yard.

3. I bought a suit of clothes for $12.50, a hat for $1.75, 2 pair of socks at 17¢ a pair, and 2 shirts at 38¢ each. How much did I pay for all?

4. A man bought at a hardware store, 12 pounds of paint at 8¢ a pound, 100 pounds of nails at 3¢ a pound, a hammer for 35¢, and 2 brushes at 30¢ each. What was his bill?

Find the amount of these bills:

5.
3 pounds of meat at 17¢.
1 pound of coffee, 35¢.
2 pounds of cheese at 14¢.
1 bag of flour, 75¢.
2 dozen eggs at 23¢.

6.
7 yards of cloth at 22¢.
11 yards of ribbon at 19¢.
4 pair of hose at 25¢.
6 skeins of yarn at 18¢.
1 pair of gloves, $1.25.

7.
5 pounds of nails at 3¢.
3 screw-drivers at 28¢.
25 pounds of paint at 13¢.
4 gallons of oil at 75¢.
2 brushes at 23¢.

Addition and Subtraction

Prove the addition by adding the columns downwards as well as upwards, and the subtraction by adding the remainders and subtrahends.

Add:

1.	2.	3.	4.	5.
$25.64	$31.00	$15.64	$51.12	$82.30
9.83	18.65	11.80	7.42	16.45
10.05	8.42	9.52	19.63	48.36
18.32	12.17	7.65	32.09	19.25
42.50	9.16	12.36	18.00	10.00
36.27	14.24	25.42	9.89	8.48
15.25	21.18	30.00	12.40	12.65
21.18	29.51	50.00	46.42	56.75
32.00	32.25	23.30	13.00	34.00
45.50	17.72	5.52	12.72	42.18
26.85	36.65	19.91	3.28	13.29
19.42	6.42	8.60	8.19	7.00
9.64	19.31	7.84	16.52	13.26
11.40	8.50	2.19	55.00	12.42
21.25	12.89	12.81	48.49	8.90

Subtract:

6.	7.	8.	9.	10.
$375.56	$238.32	$526.00	$464.00	$860.42
82.49	184.00	273.25	98.80	273.18

11.	12.	13.	14.	15.
$136.42	$358.76	$760	$858.60	$301.10
100.00	250.00	195	708.20	19.89

16.	17.	18.	19.	20.
$150.00	$200.00	$300.00	$1842	$2000.00
75.25	134.10	180.25	900	1250.00

(page 206)

Original Problems

Make problems and give the answers:

1. A boy sold a ball so as to gain $\frac{1}{3}$ as much as he paid for it.

2. A fruit dealer bought some lemons for 8 cents a dozen.

3. I bought a piece of cloth containing 38 yards and sold it to different customers.

4. A man bought 3 horses for $85 each and sold them for different prices.

5. One number is twice as large as another.

6. The difference between two numbers is 5.

7. An orange costs twice as much as a lemon, and an orange and a lemon cost 6 cents.

8. There are two numbers, one of which is 5 less than the other.

9. A square is 6 inches square.

10. A box is 5 inches long and 5 inches wide.

11. Another box is 7 inches long, 7 inches wide, and 7 inches high.

12. In 1900 the population of Colorado was 539,700 and that of Montana 243,329.

13. In 1900 the population of Florida was 528,542 and that of Idaho 161,772.

14. The area of Colorado is 103,925 square miles and that of California 158,360 square miles.

15. The area of Texas is 265,780 square miles and that of Alaska 590,884 square miles.

16. In 1900 the population of Buffalo was 352,387 and that of Cincinnati 325,902.

1. In what different ways may 24 buttons be arranged in rows with equal numbers in the rows?

2. In what different ways may 36 buttons be arranged in rows with equal numbers in the rows?

3. How may 48 blocks be arranged in piles with equal numbers in the piles?

4. Find the cost of 10 barrels of flour at $5.30 a barrel.

5. If 3 barrels of flour cost $13.50, how much will 6 barrels cost?

6. How much will 7 barrels cost?

7. A man bought 3 tons of hay at $14.75 a ton and paid with five 10-dollar bills. How much change did he receive?

8. If a can holds 10 quarts of milk, how many gallons will 6 cans hold?

9. What part of the time does a boy sleep who sleeps 8 hours each night?

10. What part of the time does a man work who works 6 hours each day?

11. How many 2-dollar bills will make $50?

12. How many 5-dollar bills will make $150?

13. How many 10-dollar bills will make $350?

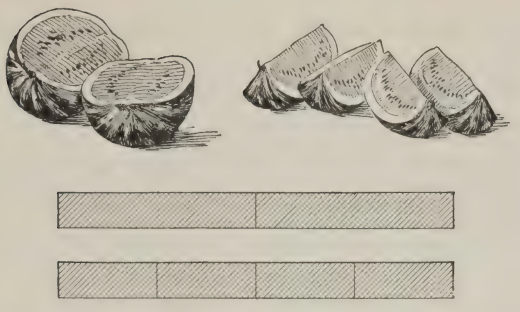
14. With what bills can I pay for a horse which costs $119?

15. With what bills can I pay for 2 cows which cost $49 each?

16. With what bills and coins can I pay for 3 shirts at 85¢ each?

17. With what bills and coins can I pay for 2 harnesses which cost $14.65 each?

Halves and Fourths



In doing this work always imagine the parts of the diagram.

1. How many halves are there in a whole apple?
2. How many fourths make a whole?
3. How much is one half and one fourth?
4. How much is one half less one fourth?

5. Three fourths and one fourth make —.
6. One whole less one fourth is — —.
7. Three fourths less one half is — —.
8. Three fourths and one half make — —.

9. One and one fourth equal — fourths.
10. One and three fourths equal — fourths.
11. One and one half equal — fourths.
12. Two wholes equal — fourths.

13. Two wholes less one fourth is one and — fourths.
14. Two wholes less one half is — —.
15. Two less one and one fourth is — —.
16. Two and one fourth less three fourths is —.
17. Three less one and one half is —.

Mental Problems

Illustrate the problems by simple diagrams. See page 197.

1. John had 12 tin soldiers. He lost 5 and bought 10 more. How many had he then?

2. Lucy had 15 cents. Her father gave her 9 cents more, and she spent 13 cents. How many had she left?

3. A lady gave 5 children 3 oranges each, and had 7 oranges left. How many had she at first?

4. Another lady wished to give 3 children 4 apples each, but to do so she would need two apples more than she had. How many had she?

5. Rachel has 1 more block than Emma has. Together they have 5 blocks. How many has each?

6. If Rachel should give Emma 2 blocks, how many would each have then?

7. I have 2 more cents in my right pocket than in my left pocket. In both pockets I have 12 cents. How many have I in each pocket?

8. If I should change 3 cents from the right pocket to the left pocket, how many should I then have in each pocket?

9. How many must I change from the right pocket to the left pocket in order to have the same number in each pocket?

10. George is twice as old as William. George is 18 years old. What is the sum of their ages?

11. Alice is three times as old as her sister. Her sister is 4 years old. What is the sum of their ages?

12. How may 18 oranges be divided into two parts so that there will be five times as many oranges in one part as in the other?

Square Inch

1. How many square inches will make an oblong 3 inches long and 2 inches wide?

2. How many square inches will make an oblong 4 inches long and 2 inches wide?

3. How many square inches are there in an oblong that is three inches wide and 4 inches long?

4. How many square inches are there in a 3-inch square?

5. How many more square inches are there in an oblong that is 4 inches long and 3 inches wide than in a 3-inch square?

6. How many square inches are there in a 5-inch square?

7. How many square inches are there in an oblong that is 7 inches long and 5 inches wide?

8. How many more square inches are there in an oblong 8 inches long and 6 inches wide than in a 6-inch square?

Problems

1. What will be the cost of 4 boxes of butter, each containing 5 pounds, at 24¢ a pound?

2. A grocer bought 6 boxes of cheese. Each box contained 42 pounds. He paid 9 cents a pound. What was the cost?

3. In an orchard there are 95 rows of trees and there are 56 trees in each row. How many trees are there?

4. If a man earns $26.50 a week and spends $18.25 a week, how much does he save in 12 weeks?

5. How much does he save in a year of 52 weeks, if he has 3 weeks of vacation?

6. A farmer sold 250 bushels of potatoes at 45¢ a bushel, 325 bushels of oats at 38¢ a bushel, and 470 bushels of corn at 53¢ a bushel. How much did he get for all?

7. A real estate dealer bought 500 acres of land at $30 an acre. He sold 75 acres at $40 an acre and 180 acres at $50 an acre. How much did he receive for the two lots which he sold?

8. How many acres has he left?

9. If he should sell what he has left for the price that it cost him, how much would he gain upon the whole?

10. If he had sold all the land at $42 an acre, how much would he have gained?

11. A dealer bought a car load of corn consisting of 500 bushels at 48¢ a bushel. He paid the freight bill of $42.50. How much did the corn cost him?

12. He sold 200 bushels at 65¢ a bushel and the remainder at 72¢ a bushel. How much did he receive in all?

Multiply:

1.	2.	3.	4.
2436	3081	5219	6090
1224	2405	2145	3515
5.	**6.**	**7.**	**8.**
8007	7900	9600	6000
3104	4210	5400	4000
9.	**10.**	**11.**	**12.**
$85.42	$243.75	$9420	$462.80
352	120	500	1200
13.	**14.**	**15.**	**16.**
$375.40	$96.10	$17864	$2752.85
1425	4560	254	3547

Divide:

17.	18.	19.	20.
12)3048	15)8715	20)4680	25)2925
21.	**22.**	**23.**	**24.**
35)7000	18)5976	40)4000	60)9840
25.	**26.**	**27.**	**28.**
62)8595	51)7046	49)3998	82)9897
29.	**30.**	**31.**	**32.**
56)3482	67)8093	45)9200	91)8090

1. How many weeks are there in 63 days?

2. How many months are there in 4 years?

3. A man bought a coat for $12, a hat for $2.25, and a pair of gloves for $2.75. How much did he pay for all?

4. A man bought a horse for $95 and a carriage for $75. He sold the horse for $120 and the carriage for $65. How much did he gain?

5. 6 times 6 is the same as 4 times what?

6. 2 times 20 is the same as 8 times what?

7. 4 times 25 is the same as 2 times what?

8. A half bushel of corn weighs 28 pounds. Find how much 8 bushels weigh.

9. A peck of wheat weighs 15 pounds. Find how much 20 bushels will weigh.

10. Add twenty-five thousand, six hundred forty-two; nine thousand, six; two hundred fifty thousand.

11. Add ninety-eight thousand, five hundred twenty; ten thousand, fifteen; one thousand, ninety.

12. Add one million, twenty thousand; fifteen million, one thousand, five hundred; two hundred seven thousand, thirty-five.

13. From two hundred thousand take twenty thousand, twenty.

14. From three hundred nine thousand take thirty thousand, nine hundred.

15. From one million, four hundred eight thousand take seven hundred ten thousand.

16. From two million, one hundred fifty thousand take eight hundred seventy-five thousand, four hundred.

1. How many hours are there from midnight to 2 o'clock the next afternoon?

2. How many hours are there from noon till 7 o'clock the next morning?

3. How many hours are there from 8 o'clock in the evening to 5 o'clock the next morning?

4. How long is the time from half past 3 o'clock to half past 9 o'clock?

5. How long is it from 5 o'clock to quarter past 8?

6. How long is it from half past 11 to a quarter of 2?

7. A man started on a journey at 8.30 A.M. and arrived at the end of the journey at 6.30 P.M. How many hours did he travel?

8. A train started at 9.15 P.M. and moved 30 miles an hour. How far had it moved at 11.45 P.M.?

9. What time was it when the train had moved 90 miles?

10. What time was it when the train had moved 150 miles?

11. A man started at 8 A.M. to row down a river at the rate of 4 miles an hour. How far had he rowed at 12.15 P.M.?

12. What time was it when he had rowed 27 miles?

13. How many hours are there from 7.20 to 10.20?

14. How many hours are there from 7.20 to 8.50?

15. How many hours are there from 9.10 to 11.25?

16. How many hours are there from 2.40 to 4.10?

17. How many hours are there from 1.17 to 4.32?

Prove the answers correct. Read the answers.

Add:

1.	2.	3.	4.
56,375	95,400	37,642	87,000
84,120	82,137	73,468	20,560
13,752	9,375	55,320	33,445
61,300	17,899	46,785	34,655
18,199	44,650	64,505	46,550

5.	6.	7.	8.
1,250,000	4,315,132	10,162,300	23,342,800
846,243	2,019,560	5,150,450	9,175,260
5,024,750	56,370	428,120	11,196,437
8,108,436	437,185	1,116,000	856,000
287,800	7,131,290	15,300,100	10,431,503

Subtract:

9.	10.	11.	12.
37,156	46,210	75,200	86,000
14,348	19,804	9,340	14,530

13.	14.	15.	16.
375,126	287,360	450,300	876,000
48,518	79,275	356,400	99,191

17.	18.	19.	20.
2,576,341	10,531,260	5,251,000	16,000,000
1,428,156	7,342,324	745,300	3,110,989

1. If the first day of May was Monday, what day of the week was the 8th day of May?

2. If the first day of August was Wednesday, what day of the week was the 12th day of August?

3. When the 20th day of October is Saturday, what day of the week is the first day of the next November?

4. Find how many days there are in a year when February has 29 days.

5. A man sold at the store 5 dozen eggs at 18¢ a dozen and took his pay in sugar at 5 cents a pound. How many pounds did he receive?

6. A lady bought 8 yards of cloth at 11 cents a yard and paid with butter at 22¢ a pound. How many pounds did it take?

7. A man spent $\frac{3}{4}$ of his money and had $24 left. How much had he at first?

8. After a boy had sold $\frac{3}{5}$ of his papers he had 6 papers left. How many had he at first?

9. $\frac{2}{7}$ of the money that I have is 6 cents. How much have I?

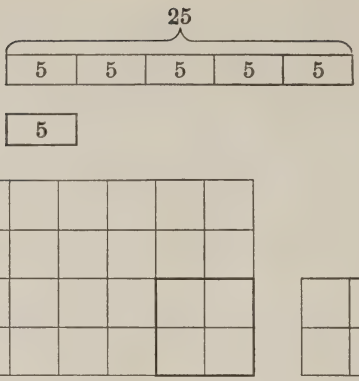
10. A boy had 12 cents and spent 8 cents. What part of his money did he spend?

11. He had 15 cards and lost 9 of them. What part of the cards had he left?

12. $\frac{4}{5}$ of the children are present. 9 are absent. How many are present?

13. $\frac{2}{3}$ of the days in the month of April were pleasant. How many days were stormy?

14. If $\frac{1}{4}$ of a pound of butter costs 6 cents, how much will 12 ounces cost?



Ratio means relation.

The ratio of one number or quantity to another is the number of times that the first contains the second.

1. What is the ratio of 25 to 5?

2. What is the ratio of 81 to 9?

3. What is the ratio of 81 to 3?

4. What is the ratio of an oblong 6 inches long, 4 inches wide, to a square 2 inches long?

5. What is the ratio of a square 6 inches long to a square 2 inches long?

6. What is the ratio of an oblong 9 inches long, 6 inches wide, to an oblong 3 inches long, 2 inches wide?

7. What is the ratio of a gallon to a pint?

8. What is the ratio of half a bushel to 2 quarts?

9. What is the ratio of 10 yards to 2 feet?

10. What is the ratio of 2 pounds to 4 ounces?

11. What is the ratio of 4 weeks to 4 days?

Original Problems

Make problems and give the answers:

1. From a piece of cloth that contained 45 yards 3 pieces were sold.

2. There are 2 boxes filled with beans.

3. A man bought 2 pounds of meat at the store.

4. A stairway has 14 stairs.

5. I bought at the market some meat, butter, and eggs.

6. I bought at the dry-goods store some gloves, collars, and socks.

7. Jennie has a half of an apple and three fourths of another apple.

8. John had 2 pears and gave his brother $\frac{3}{4}$ of one pear.

9. Henry had 14 marbles. He lost some and bought more.

10. Marjorie had 17 cents. Her father gave her more, and then she spent some.

11. I have $3 more in my left pocket than in my right pocket.

12. 4 boxes of butter were sold at 18¢ a pound.

13. A man earns $65 a month and spends a part of it.

14. A farmer sold some corn, wheat, oats, and potatoes.

15. A man bought 700 acres of land and sold it in 3 parts.

16. Charles went to bed at 9.30 P.M. and slept $8\frac{1}{4}$ hours.

17. He worked $5\frac{3}{4}$ hours, beginning at 7.45 A.M.

Problems

1. A peddler had a bushel of onions. After he had sold $\frac{3}{4}$ of them how many quarts had he left?

2. When he had sold 8 quarts what part of them had he left?

3. A boy had 20 miles to ride upon his bicycle. When he stopped to rest he had gone $\frac{2}{5}$ of the distance. How many miles had he gone?

4. When he had gone 16 miles what part of the distance remained?

5. A man who had a farm of 200 acres gave $\frac{2}{5}$ of it to his oldest son. How many acres did the son receive?

6. He gave $\frac{1}{5}$ of it to his youngest son. How many acres did this son receive?

7. What part of the farm remained?

8. There were 60 yards in a piece of cloth. When 15 yards were sold what part of the cloth was sold?

9. When 40 yards were sold what part of the cloth was sold?

10. There are 600 children in school. $\frac{1}{3}$ of them are in the sixth grade. How many are in the sixth grade?

11. 150 children are in the seventh grade. What part of all the children are in the seventh grade?

12. $\frac{1}{4}$ of all the children are in the eighth grade. How many children remain for the ninth grade?

13. There are 2400 people in a certain village. $\frac{1}{5}$ of these people are children of school age. How many are of school age?

14. $\frac{3}{4}$ of those who are of school age attend school. How many attend school?

Drill Work

1.	2.	3.	4.
$2 \times 12 = ?$	$6 \times 12 = ?$	$3 \times 11 = ?$	$7 \times 9 = ?$
$3 \times 12 = ?$	$8 \times 12 = ?$	$7 \times 11 = ?$	$8 \times 11 = ?$
$5 \times 12 = ?$	$10 \times 12 = ?$	$9 \times 10 = ?$	$10 \times 9 = ?$
$7 \times 12 = ?$	$9 \times 12 = ?$	$9 \times 11 = ?$	$11 \times 10 = ?$
$4 \times 12 = ?$	$11 \times 12 = ?$	$12 \times 12 = ?$	$12 \times 10 = ?$

5.	6.	7.	8.
$3 \times ? = 36$	$72 \div ? = 6$	$81 \div ? = 9$	$144 \div ? = 12$
$60 \div ? = 12$	$12 \times ? = 108$	$12 \times ? = 48$	$80 \div ? = 10$
$88 \div 11 = ?$	$121 \div ? = 11$	$36 \div 12 = ?$	$70 \div ? = 7$
$90 \div ? = 9$	$120 \div ? = 12$	$11 \times 12 = ?$	$11 \times ? = 66$
$7 \times ? = 84$	$96 \div 12 = ?$	$132 \div 11 = ?$	$108 \div ? = 12$

9. There are — 10's in 80.
10. There are — 11's in 110.
11. There are — 12's in 84.
12. There are — 11's in 132.
13. There are — 12's in 144.

14. 11 is contained in 99 — times.
15. 12 is contained in 96 — times.
16. 12 is contained in 48 — times.
17. 11 is contained in 121 — times.
18. 12 is contained in 108 — times.

United States Money

1. A man deposited in the bank $50.75, $243.75, $168.50, and $94.25. He drew out $135, $43.50, and $65.32. How much remained in the bank?

2. A man sold 12 cows for $504. What was the average price of one cow?

3. He sold 130 sheep at $3.50 each. How much did he receive for them?

4. 15 house lots were sold for $6900. What was the price of each?

5. A dealer sold 125 barrels of flour at $5.25 a barrel. What was the amount of the sale?

6. How many 5-cent pieces will it take to pay a bill of $2.50?

7. How many dimes will make $3.80?

8. How many quarter dollars will amount to $8.75?

9. How many half dollars will amount to $55.50?

10. A man paid a bill of $3.20 with a 5-dollar bill and received the change in 5-cent pieces. How many did he receive?

11. I paid a bill of $7.60 with a 10-dollar bill and received the balance in dimes. How many were there?

12. With what bills and coins can I pay a bill of $124.85?

13. With what bills and coins can I pay for 18 pair of shoes which cost $2.37 a pair?

14. With what bills and coins can I pay for 27 yards of cloth which cost $1.15 a yard?

15. With what bills and coins can I pay for 225 pounds of fish at 17¢ a pound?

Drill Table

Read the directions on page 158.

	1.	2.	3.	4.	5.	6.
a.	25	38	53	71	80	46
b.	50	71	87	76	85	67
c.	32	14	35	46	85	37
d.	41	60	15	32	85	75
e.	65	45	22	42	85	28
f.	84	23	44	71	55	47
g.	79	82	74	36	55	43
h.	93	31	67	32	55	79
i.	30	73	83	42	55	38
j.	42	92	23	46	55	86
k.	51	29	92	71	95	29
l.	23	85	35	31	95	55
m.	87	54	19	72	95	32
n.	36	28	61	40	95	29
o.	19	17	24	46	95	49
p.	60	70	46	71	85	64
q.	52	36	53	72	85	58
r.	75	64	32	32	85	48
s.	23	83	85	36	55	19
t.	12	41	77	41	55	77
u.	86	17	63	31	55	34
v.	54	52	92	76	95	36
w.	41	93	52	76	95	35
x.	68	36	26	42	95	49

Review

1. How many minutes are there in $\frac{1}{6}$ of an hour?

2. How many minutes are there in $\frac{1}{5}$ of an hour?

3. What part of an hour are 40 minutes?

4. What part of an hour are 5 minutes?

5. If a man drives a mile in 6 minutes, how many miles an hour will he drive at that rate?

6. If a train goes 30 miles an hour, how far does it go in 10 minutes?

7. Name all the even numbers from 2 to 24.

8. Name all the odd numbers from 5 to 25.

9. Name all the numbers from 4 to 28 which will exactly contain 4.

10. Name all the numbers from 6 to 42 which will exactly contain 6.

11. If there are 12 children in a row and 10 rows, how many children are there?

12. In what different ways may 72 blocks be arranged in rows with equal numbers in the rows?

13. 8 times 7 are how many times 4?

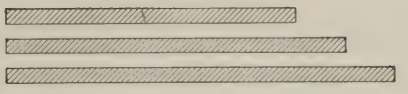
14. 6 times 8 are how many times 3?

15. How far is it around a 6-inch square?

16. How many square inches are there in a 6-inch square?

17. How far is it around an oblong which is 12 inches long and 3 inches wide?

18. How many square inches are there in this oblong?



The length of the middle line is the average length of the three lines. The combined length of three lines like the middle line would equal the combined length of the three given lines. The middle line is equal to one third of the sum of the three lines.

1. If 18 blocks are placed in 3 equal piles, how many will there be in each pile?

2. What is the average of 7, 3, and 2?

$$7 + 3 + 2 = 12;\ 12 \div 3 = 4.$$

3. One child has 8 cents, another has 7 cents, another 6 cents. If the cents were divided equally among the three children, how many would each have?

4. What is the average of 4, 11, and 9?

5. Find the average of 8, 5, 7, and 4.

6. Find the average of 11, 14, and 20.

7. Find the average of 3, 7, 10, 6, and 9.

8. Ellen slept 7 hours Monday night, 8 hours Tuesday night, and 6 hours Wednesday night. How many hours was the average for the three nights?

9. A man worked in a mill 9 hours Monday, 7 hours Tuesday, 10 hours Wednesday, 8 hours Thursday, 6 hours Friday, and 8 hours Saturday. How many hours a day was the average for the week?

10. Edgar's marks in arithmetic for five weeks were 8, 5, 7, 6, and 9. What was his average mark?

11. The numbers of children in four rooms are 34, 39, 42, and 33. What is the average number for a room?

Multiply:

1.	2.	3.	4.
3175	5098	6700	8109
2316	3915	3672	4537
5.	**6.**	**7.**	**8.**
7053	8950	3500	8005
3700	9600	9800	6408
9.	**10.**	**11.**	**12.**
12,518	24,025	44,300	95,000
4,326	3,102	2,120	2,000

Divide:

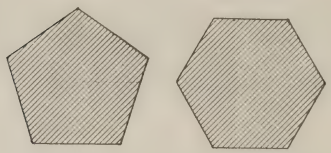
13.	14.	15.	16.
35)700	63)693	24)768	72)946
17.	**18.**	**19.**	**20.**
125)2625	231)3224	350)7350	143)4576
21.	**22.**	**23.**	**24.**
260)3380	324)7776	415)9545	460)8280
25.	**26.**	**27.**	**28.**
116)3890	142)3715	231)6428	320)7500
29.	**30.**	**31.**	**32.**
200)4800	250)5250	316)9426	423)8765

Thirds and Sixths

Before answering the following questions either look at or imagine the diagram.

1. How many thirds are there in one whole?
2. How many sixths are there in one whole?
3. How many sixths are there in one third?
4. How many sixths are there in one half?
5. How many thirds are there in four sixths?
6. One third and one sixth are — sixths.
7. Two thirds and one sixth make — sixths.
8. One third less one sixth is — sixth.
9. Two thirds less one sixth is — sixths.
10. One third and three sixths are — sixths.
11. One and one third equal — thirds.
12. One and one sixth equal — sixths.
13. One less one third equals — thirds.
14. One less one sixth equals — sixths.
15. One and two thirds equal — thirds.
16. In two and one third there are — thirds.
17. In one and five sixths there are — sixths.
18. In two less two thirds there are — thirds.
19. In two less one sixth there are — sixths.
20. In three less two thirds there are — thirds.

Pentagons and Hexagons



Pentagon Hexagon

A plane surface that has 5 straight sides is called a **pentagon.**

A plane surface that has 6 straight sides is called a **hexagon.**

If the sides of a pentagon are all equal to one another, it is a **regular pentagon.**

If the sides of a hexagon are all equal to one another, it is a **regular hexagon.**

1. If one side of a regular pentagon is 5 inches long, how far is it around the pentagon?

2. If $\frac{1}{2}$ of the length of the side of the pentagon is 4 inches, what is the distance around the pentagon?

3. If one side of a regular hexagon is 3 inches, how far is it around the hexagon?

4. If $\frac{1}{2}$ of the length of one side of the hexagon is 2 inches, what is the distance around the hexagon?

5. If the distance around a regular pentagon is 20 inches, how long is one side?

6. If the distance around a regular hexagon is 42 inches, what is the length of one side?

7. If the distance around a regular pentagon is 40 inches, what is half the length of one side?

8. If the distance around a regular hexagon is 36 inches, what is one third of the length of one side?

Review

1. A ship sailed 3906 miles in 18 days. How far did it sail in 1 day?

2. How far did it sail in 12 days?

3. A drover bought 245 cows at an average price of $38 each. What was the cost of all of them?

4. There are 320 rods in a mile. Find how many rods there are in 240 miles.

5. Find how many miles there are in 8320 rods.

6. A farmer sold 160 acres of land at $150 an acre. How much did he receive?

7. A tract of land contains 9600 acres. Into how many farms of 150 acres each can it be divided?

8. Into how many farms of 75 acres each could it be divided?

9. If one acre of land yields 235 bushels of potatoes, how many bushels will 340 acres yield at the same rate?

10. A farmer raised 5400 bushels of wheat upon 225 acres of land. What was the average yield per acre?

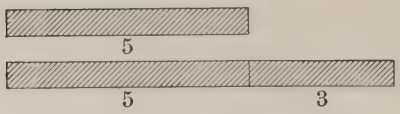
11. If the minuend is 15,100 and the subtrahend 9020, what is the remainder?

12. If the multiplicand is 1256 and the multiplier 42, what is the product?

13. If the dividend is 4536 and the divisor 21, what is the quotient?

14. If an orange tree bears 3000 oranges a year, and bears oranges 50 years, how many does it bear in all?

15. The length of the Atlantic Ocean is about 9000 miles. How many hours would it take to sail that distance at the rate of 20 miles an hour?



Make diagrams to illustrate the problems.

1. The difference between two numbers is 3 and the sum of the numbers is 13. What are the numbers?

2. The sum of two numbers is 27 and the difference between them is 7. What are the numbers?

3. I had $15 at first. I spent $9 and earned $5 more. How much money had I then?

4. A man had $4. Some one paid him $13 more and he spent $9. How much money had he left?

5. Ruth has 8 cents and her sister has twice as many. How many cents have they together?

6. Charles has 16 apples and his brother has $\frac{1}{4}$ as many. How many have they together?

7. Twice my age and 3 years more would be 43 years. How old am I?

8. Three times a certain number and 1 more would be 13. What is the number?

9. 9 years would be 3 years more than $\frac{1}{2}$ of Chester's age. How old is he?

10. 10 cents would be 2 cents more than $\frac{1}{2}$ of the cents that I have in my pocket. How many have I?

11. 5 cents would be 3 cents less than $\frac{1}{4}$ of my money. How much have I?

12. One half of Arthur's marbles would be equal to the number which his brother has. His brother has 7. How many have they together?

Problems from History

1. Columbus was born in 1446. In 1492 he sailed to America. How old was he when he sailed?

2. He died in the year 1506. At what age did he die?

3. George Washington was born Feb. 22, 1732. His father died in 1743. How old was he when his father died?

4. In what year was George Washington 20 years old?

5. Washington died in 1799. At what age did he die?

6. Benjamin Franklin was 46 years old when George Washington was 20 years old. In what year was Benjamin Franklin born?

7. Abraham Lincoln was born Feb. 12, 1809. He died April 15, 1865. How many years and months did he live?

8. Longfellow was born in 1807 and died in 1882. How many more years did he live than Lincoln?

9. William McKinley became President in 1897. He was then 54 years old. In what year was he born?

10. How old was Longfellow when William McKinley was born?

11. William McKinley was a soldier in the Civil War when Lincoln was President. How many years younger was he than Lincoln?

12. Thomas A. Edison was born in 1847. How old was he in 1901?

13. Arbor day was first celebrated by the schools of Cincinnati, Ohio, in 1882. How many years ago was that?

Original Problems

Make problems and give the answers:

1. A man bought a suit of clothes, a pair of shoes, some collars, and a necktie.

2. A drover bought 4 cows and 20 sheep.

3. A peck of corn weighs 14 pounds.

4. A half bushel of wheat weighs 30 pounds.

5. Mr. Brooks left home at 7.25 A.M. and returned at 9.55 P.M.

6. The express train left New York at 8.20 P.M. and moved 40 miles an hour.

7. The first day of March was Wednesday.

8. Tuesday was the 20th of April.

9. A man spent $\frac{2}{3}$ of his money and had some left.

10. A boy sold $\frac{3}{5}$ of his papers and had some left.

11. Raymond had 15 marbles and lost 10 of them.

12. An oblong is 3 inches wide and 8 inches long.

13. A peddler had a bushel of berries and sold $\frac{1}{4}$ of them.

14. A boy started to ride 24 miles with his bicycle. At noon he had gone 16 miles.

15. A man deposited money in the bank three times and took out money twice.

16. An overseer earns $\$27$ a week and spends a part of it.

17. I had $\$20$. I spent a part of the money and afterwards earned more.

Drill Work

Try to find the answers without using the pencil.

1. $100 + 150 + 250 + 300 = ?$
2. $125 + 200 + 175 - 100 = ?$
3. $350 - 150 + 400 + 225 = ?$
4. $500 - 250 + 150 - 200 = ?$
5. $375 + 125 - 250 + 150 = ?$
6. $1000 + 2500 + 3000 + 1500 = ?$
7. $2400 + 600 + 3000 - 4000 = ?$
8. $3500 + 2500 - 200 + 4500 = ?$
9. $5000 - 4500 + 500 - 200 = ?$
10. $10{,}000 - 500 + 2500 - 1500 = ?$

11. Find the sum of three hundred fifty, two hundred fifty, and one hundred twenty-five.

12. Find the sum of one hundred twenty-five, one hundred seventy-five, two hundred fifty, and three hundred.

13. Find the difference between four hundred seventy-five and two hundred twenty-five.

14. Find the difference between three hundred seventy-five and four hundred twenty-five.

15. From the sum of six hundred fifty and three hundred take one hundred twenty-five.

16. Add two thousand, three thousand five hundred, one thousand two hundred fifty.

17. From eight thousand, seven hundred fifty take four thousand, two hundred fifty.

1. A boy sold a knife and gained $\frac{1}{2}$ as much as he paid for it. He paid 30 cents. How much did he receive?

2. A man bought a watch for $12 and sold it, losing $\frac{1}{3}$ of the cost. How much did he receive?

3. A merchant sold some goods for $25 at a gain of $5. What part of the cost did he gain?

4. He sold other goods for $9 at a loss of $3. What part of the cost did he lose?

5. If I should buy a horse for $90 and should sell him so as to gain $\frac{1}{6}$ as much as he cost, how much should I gain?

6. What would be the selling price?

7. If I should buy a carriage for $60 and should sell it so as to lose $\frac{1}{4}$ of the cost, how much should I lose?

8. What would be the selling price?

9. A fruit dealer sells oranges at a gain of $\frac{1}{2}$ as much as the cost. He gains 2 cents on each orange. What is the cost?

10. What is the selling price?

11. A drover sold some sheep at a loss of $\frac{1}{6}$ of the cost. He lost 50 cents on each sheep. What was the cost of each sheep?

12. How much did he lose on 50 sheep?

13. How much did he receive for the 50 sheep?

14. How much did he pay for the 50 sheep?

15. I bought some goods and sold them so as to gain $\frac{1}{3}$ as much as they cost. I gained $40. How much did I pay for them?

1. What part of an apple is three fourths of an apple less one half of an apple?

2. What part of an apple is one half of one half of an apple?

3. How much is one and one fourth less one half?

4. How much is one and one half and three fourths?

5. How much is two and one half less three fourths?

6. What part of an orange is three sixths of an orange?

7. What part of an orange is two sixths of an orange?

8. How much is one half of one third?

9. How much is one half of two thirds?

10. Which is larger, one fourth or one third?

11. Which is larger, two thirds or three fourths?

12. What is the difference between one third of 12 and one fourth of 12?

13. What is the difference between two thirds of 12 and three fourths of 12?

14. How much difference is there between one half of 24 and two thirds of 24?

15. How much difference is there between one half of 36 and three fourths of 36?

16. How much is five sixths of 36?

17. What is the difference between three fourths of 36 and five sixths of 36?

18. What is the difference between one fourth of 72 and one sixth of 72?

19. What is the difference between two thirds of 72 and five sixths of 72?

Measures of Time

1. How many hours are there in $\frac{3}{4}$ of a day?
2. How many hours are there in $\frac{5}{6}$ of a day?
3. What part of a day are 8 hours?
4. What part of a day are 16 hours?
5. How many months are there in $\frac{5}{6}$ of a year?
6. 8 months are what part of a year?
7. How many years are there in a quarter of a century?
8. How many years are there in half a century?
9. What part of an hour are 20 minutes?
10. What part of an hour are 45 minutes?
11. How many minutes are there in $\frac{2}{3}$ of an hour?
12. How many minutes are there in $\frac{1}{5}$ of an hour?
13. What part of an hour are 10 minutes?
14. How many minutes are there in $\frac{5}{6}$ of an hour?
15. How many hours are there in a day and a half?
16. How many days are there in 48 hours?
17. How many minutes are there in an hour and a half?
18. How many minutes are there in $2\frac{3}{4}$ hours?
19. How many days are there in 120 hours?
20. How many seconds are there in $\frac{1}{2}$ of a minute?
21. How many seconds are there in $\frac{3}{4}$ of a minute?
22. How many seconds are there in 5 minutes?
23. How many minutes are there in 390 seconds?
24. How many minutes are there in a day?
25. How many seconds are there in a day?

Problems

1. How many quarts of milk at 6¢ a quart will cost 72 cents?

2. How many barrels of flour at $4 a barrel will cost $128?

3. If 12 cows cost $336, what is the average price of each cow?

4. A produce dealer sold a car load of potatoes for $211.60. There were 460 bushels. What was the price per bushel?

5. He paid 40¢ a bushel for the potatoes. How much did he gain?

6. A man sold a car load of flour. There were 150 barrels. The price per barrel was $3.75. How much did he receive?

7. When he bought the flour he paid $3.40 a barrel. How much did he gain?

8. How many dozen eggs at 20¢ a dozen would it take to pay for a barrel of flour which costs $5.40?

9. How many quarts of berries at 12¢ a quart will it take to pay for 15 pounds of butter at 20¢ a pound?

10. How many bushels of apples at 60¢ a bushel will it take to pay for a ton of hay which costs $18?

11. How many hours' work at 15¢ an hour will it take to pay for a suit of clothes costing $10.50?

12. A man earned $24 one week and $18 the next week. He paid $4.50 each week for board, and bought a suit of clothes for $17.50. How much money had he left?

13. A man earned $15 a week for two weeks, and then was idle 3 weeks. He paid $4.25 a week for board for the whole time. How much money had he left?

In examples 17 to 28 notice that in dividing by 10 the first figure at the right in the dividend becomes the remainder and the remaining figures the quotient. In dividing by 100 the first two figures from the right become the remainder and the remaining figures the quotient, and so on.

Multiply :

1.	2.	3.	4.
2564	8437	7638	9108
1000	2000	5000	7000

5.	6.	7.	8.
3410	6500	4090	8000
1000	2000	4000	7000

9.	10.	11.	12.
100	1000	2000	5000
756	1567	1800	8437

13.	14.	15.	16.
100	15,780	3000	78,300
12,400	2000	45,960	8000

Divide :

17.	18.	19.	20.
10)360	10)2755	10)9450	10)7643

21.	22.	23.	24.
100)200	100)3500	1000)9000	1000)54,000

25.	26.	27.	28.
100)375	1000)3457	100)750	1000)28,450

1. How many years are there from January 1, 1894, to January 1, 1896?

2. How many years are there from April 1, 1891, to April 1, 1899?

3. How many years are there from May 30, 1864, to May 30, 1880?

4. How many months are there from January 1 to June 1?

5. How many months are there from August 12 to September 12?

6. How many years and how many months are there from April 10, 1876, to August 10, 1880?

7. How many years and how many months are there from January 1, 1898, to March 1, 1900?

8. How many months are there from February 15 to November 15?

9. How many months and how many days over are there from February 15 to November 18?

10. How many months and how many days over are there from July 21 to October 29?

11. How many days are there from March 31 to April 2?

12. How many days are there from November 28 to December 1?

13. How many years and months are there from April 10, 1895, to July 10, 1900?

14. How many months and days are there from September 19 to December 27?

15. How many years, months, and days are there from January 1, 1900, to March 3, 1901?

Problems

1. At $100 an acre how many acres of land can be bought for $2300?

2. Find the value of 2500 acres of land at $200 an acre.

3. What is the value of 3000 sheep at $2.75 each?

4. A man sold 600 sheep for $1800. What was the average price of each sheep?

5. A company bought 10,000 acres of wild land at $7.50 an acre. How much did they pay for the land?

6. A merchant had goods in his store worth $2375. He bought goods for $1427. He sold all the goods for $4836. How much did he gain?

7. Mr. Angell bought 370 bushels of corn at $.53 a bushel, 275 bushels of oats at $.30 a bushel, and 300 bushels of wheat at $.87 a bushel. How much did he pay for all?

8. Gifford & Co. bought 24 coats at $6.50 each, 48 pair of gloves at $.75 a pair, and 60 hats at $2.50 each. How much did they pay for all?

9. A farmer sold his wheat at $.92 a bushel and received for it $397.44. How many bushels did he sell?

10. He raised 1200 bushels of corn and sold it for $504. How much did he receive per bushel?

11. I bought a farm of 320 acres for $20,800. How much did I pay per acre?

12. I sold the farm for $72 an acre. How much did I gain?

13. What is the cost of two horses at $75 each, 2 harnesses at $23.50 each, and 2 carriages at $87 each?

Review

1. Five and two thirds equal how many thirds?

2. Three and five sixths equal how many sixths?

3. How many wholes are there in eighteen fourths?

4. How many wholes are there in thirty-nine fifths?

5. A boy had 17 cherries. He ate 12 of them, and his brother gave him 8 more. How many had he then?

6. A milkman left 3 quarts of milk at each of 9 houses, and had 8 quarts left. How many quarts had he at first?

7. What is the value of 6 five-pound boxes of butter at 28¢ a pound?

8. In a vineyard there are 56 grapevines in a row and 100 rows. How many vines are there?

9. In an orchard there are 4500 trees. There are 45 rows. How many trees are there in each row?

10. What is the value of 20 acres of land at $200 an acre?

11. If 40 acres of land cost $4000, what is the price per acre?

12. A grocer bought 200 barrels of flour at $4 a barrel. He sold 100 barrels at $4.50 a barrel, and 50 barrels at $5 a barrel. He sold the remainder at cost. How much did he gain?

13. How much more would he have gained if he had sold the whole lot at $5 a barrel?

14. A man bought a house for $3500 and another for $2800. He sold the first for $4300 and the second for $2500. How much did he gain?

15. How much would he have gained if he had sold the houses for $3500 each?

* See pages 164 and 194.

Read these numbers:

1.	2.	3.
10,300	1,500,000	500,000,000
19,090	5,230,200	800,200,000
200,250	10,000,000	650,042,500
305,040	35,045,000	1,000,000,000
900,909	120,200,500	5,250,000,000

Write the following numbers with figures:

4. Twenty thousand, five hundred.

5. Two hundred seventeen thousand, ninety.

6. Eight hundred thousand, seven hundred six.

7. One million, two hundred thousand.

8. Six million, thirty-two thousand, five hundred.

9. One million, one hundred thousand, one hundred.

10. Sixty-three million, twenty thousand.

11. One hundred fifty million.

12. Two billion, one hundred million.

13. Add one million, three hundred fifty thousand; seven million, eighty-four thousand; two hundred five thousand, four hundred.

14. Add two million, four hundred thousand; nine hundred sixty thousand; seven thousand, two hundred.

15. From one hundred million take one hundred thousand.

Ratio

Review page 218.

1. How many times is 8 contained in 56?

2. What is the ratio of 56 to 8?

3. What is the ratio of 108 to 9?

4. How many times is a pint contained in a gallon?

5. What is the ratio of a gallon to a pint?

6. What is the ratio of a pint to a gallon?

7. What is the ratio of a bushel to 2 quarts?

8. What is the ratio of a bushel to 4 quarts?

9. What is the ratio of 4 feet to 3 inches?

10. What is the ratio of 3 yards to 6 inches?

11. A barrel contains 2 bushels and 3 pecks of apples. What is the ratio of a barrel of apples to a peck of apples?

12. September has 30 days. What is the ratio of the month to the first two days of the month?

13. Which is greater, the ratio of 35 to 5, or the ratio of 40 to 5?

14. Which is greater, the ratio of 54 inches to 6 inches, or the ratio of 5 feet to 6 inches?

15. Which is greater, the ratio of 3 pounds to 2 ounces, or the ratio of 3 feet to 2 inches?

16. What is the ratio of a square 4 inches long to a square 2 inches long?

17. What is the ratio of an oblong 8 inches long, 6 inches wide, to a square 2 inches long?

18. What is the ratio of an oblong 9 inches long, 8 inches wide, to an oblong 4 inches long, 3 inches wide?

Original Problems

Make problems and give the answers:

1. A boy sold a knife and gained $\frac{1}{3}$ as much as he paid for it.

2. A man sold a watch and lost $\frac{1}{2}$ of the cost.

3. I bought a horse for $100 and sold him at a gain.

4. A merchant bought goods for $60 and sold them at a loss.

5. A girl had $\frac{1}{3}$ of an apple and $\frac{1}{6}$ of the apple.

6. $\frac{1}{2}$ of my money and $\frac{1}{4}$ of it would be $9.

7. A board was 12 feet 8 inches long, but a carpenter sawed off a piece of it.

8. There were 3 pecks 6 quarts of beans in a barrel, but a part of them have been sold.

9. Charles went to the store for his mother and returned in $\frac{1}{5}$ of an hour.

10. School closed one forenoon at 11.20 instead of at 12 o'clock.

11. A grocer sold some barrels of flour at $5.30 a barrel.

12. A man earned $15 a week for 12 weeks and spent a part of it for board.

13. William left home May 10 and returned October 15.

14. A family went to Europe July 5, 1899, and returned home September 5, 1900.

15. The term of school commenced February 5 and ended June 27.

16. A ship sailed from Liverpool October 14 and reached New York November 21.

Problems

1. If a freight train moves 12 miles an hour, how many hours will it take to move 144 miles?

2. If an express train runs 80 miles in 2 hours, in how many hours will it run 400 miles?

3. How many miles would the express train run in 50 hours?

4. When eggs are worth 11 cents a dozen, what is the value of 30 dozen?

5. What is the value of 100 dozen?

6. If 5 dozen eggs cost $.60, how much will 10 dozen eggs cost?

7. How much will 100 dozen cost?

8. If $100 is equally divided among 25 men, how much will each man receive?

9. I had $17. I paid 3 men equal sums and had $2 left. How much did I pay each man?

10. I had 22 cents. I gave 4 boys equal numbers of cents. How many cents did each boy receive and how many had I left?

11. If 7 sheep cost $42, how much will 3 sheep cost?

12. If 6 men could build a piece of fence in a day, how many men would it take to build it in 2 days?

13. If a man can row 11 miles in 3 hours, how far can he row in 6 hours?

14. If a boy can walk 5 miles in 2 hours, how far can he walk in 6 hours?

15. If a boy can ride on a bicycle 24 miles in 3 hours, how far can he ride in 7 hours?

Footing Columns

Add:

1.	2.	3.	4.	5.
$11.65	$37.50	$50.00	$36.25	$17.42
25.18	25.25	25.00	42.30	10.00
9.24	9.50	75.25	18.26	15.50
27.00	12.50	8.65	9.57	13.28
15.90	8.75	13.45	24.31	9.53
8.00	10.25	32.10	26.10	8.27
32.15	15.50	16.20	12.42	16.42
13.84	7.00	7.90	10.15	21.18
23.50	10.50	25.00	9.24	42.31
17.25	24.25	13.45	24.17	14.60
10.00	16.00	18.70	34.16	37.42
25.00	15.75	9.25	27.36	23.18

6.	7.	8.	9.	10.
$112.16	$225.00	$195.32	$110.36	$350.00
24.18	75.50	231.48	225.45	118.35
31.14	112.25	85.64	64.32	48.22
216.00	136.75	53.28	74.00	131.46
134.22	92.00	109.08	224.24	72.32
76.51	68.50	315.27	83.00	81.15
211.12	215.25	74.48	116.50	212.18
43.00	36.50	63.56	318.25	137.57
58.50	48.75	118.00	73.20	234.15
311.24	84.23	93.25	125.32	161.50
82.14	315.00	72.50	81.00	341.19
100.00	116.32	237.42	300.00	255.30

(page 246)

1. How many hours are there from 6 A.M. to 9.45 A.M.?

2. How many hours are there from 8.20 A.M. to 9.40 A.M.?

3. How many hours are there from 7.20 P.M. to 8.30 P.M.?

4. How many hours are there from 2.45 P.M. to 4.15 P.M.?

5. A train left New York at 7.30 P.M. and moved at the rate of 40 miles an hour. What time was it when the train had reached a place 100 miles from New York?

6. What time was it when the train had reached a place 130 miles from New York?

7. How many feet are $2\frac{1}{2}$ feet and $1\frac{1}{4}$ feet?

8. How many pecks are $4\frac{3}{4}$ pecks less $2\frac{1}{2}$ pecks?

9. 2 hours less $\frac{2}{3}$ of an hour are how many hours?

10. 4 pounds less $1\frac{1}{2}$ pounds are how many pounds?

11. How many square inches are there in a 15-inch square?

12. How many square inches are there in an oblong that is 6 inches long and 3 inches wide?

13. A box is 10 inches long and 5 inches high. How many square inches are there on the two sides?

14. Another box is 5 inches long, 5 inches wide, and 5 inches high. How many square inches are there on the top and bottom?

15. How many square inches are there in the whole surface of the box?

16. In a window there are 8 panes of glass. Each pane is 10 inches long and 8 inches wide. How many square inches are there on all the panes?

1. From the sum of 8350 and 3475 take 5000.

2. To the difference between 1200 and 365 add 842.

3. Multiply the sum of $1300 and $2800 by 12.

4. Multiply the difference between 5000 and 3000 by 65.

5. Divide the sum of 4200 and 5800 by 100.

6. From the quotient of 2750 divided by 50 take 25.

7. Divide the product of 50 and 200 by 25.

8. Multiply the product of 27 and 40 by 35.

9. Divide the quotient of 625 and 25 by 5.

10. From the difference between $125.50 and $85.40 take $15.50.

11. A man deposited in the bank $12,300 and $7450 and took out $9560. How much remained in the bank?

12. The sum of two numbers is 10,432 and the greater number is 7316. What is the less number?

13. In an army of 8365 men 675 men were killed and 1356 were wounded. How many men remained?

14. A man had property worth $60,000. He left $\frac{1}{3}$ of it to his wife, $\frac{1}{4}$ of it to his daughter, and the remainder to his son. How much did the son receive?

15. A wealthy man divided $800,000 equally among five colleges. How much did each receive?

16. A man bought some real estate for $12,850. He expended $3700 for improvements upon it and then sold it for $20,000. How much did he gain?

17. I bought a house for $3200 and paid $425 for repairs and insurance. It was burned and I received $2500 insurance. How much did I lose?

Quires

There are 24 sheets of paper in a quire.

1. How many sheets are there in half a quire?

2. How many sheets are there in a quire and a half?

3. How many sheets are there in 2 quires and a half?

4. If I should use 2 sheets of paper with each letter, how many letters could I write with a quire of paper?

5. How many letters could I write with a quire and a half of paper?

6. How many sheets are there in 10 quires?

7. If I should use 3 sheets of paper for each envelope, how many envelopes would it take for a quire of paper?

8. How many quires of paper would it take for 24 envelopes?

9. If I buy a quire of paper for 12 cents, how many sheets do I get for a cent?

10. At the rate of 3 sheets for a cent what would be the cost of a quire?

11. If there are 500 envelopes in a box and a box costs 80 cents, how many envelopes can be bought for a cent at that rate?

12. If the envelopes are in packages of 25 each, how much does each package cost?

13. I bought a quire of paper at the rate of 3 sheets for a cent and one half as many envelopes as sheets of paper, paying at the rate of 1 cent for 2 envelopes. What was the cost of the paper and the envelopes?

14. I wrote letters enough to use up the paper, using 2 sheets for each letter. I put a 2-cent stamp on each envelope. What was the cost of all the letters?

Problems

1. How much would it cost to send a telegraph message of 16 words at the rate of 25¢ for 10 words and 2¢ extra for each additional word?

2. What would be the cost of sending a message of 19 words at the rate of 40¢ for 10 words and 3¢ for each additional word?

3. How much will 3 quires of paper cost at $\frac{1}{2}$¢ a sheet?

4. How much will a quire of paper cost at the rate of 3 sheets for 2 cents?

5. If a bunch of 25 envelopes costs me 10 cents, how many do I get for 2 cents?

6. If 4 quarts of apples cost $.20, what will be the cost of a bushel and a half?

7. How much will 2 bushels and 1 peck of oats cost at 32¢ a bushel?

8. How much would a quart of peanuts cost at the rate of $.48 a peck?

9. At the rate of $.56 a peck how much would 5 quarts of berries cost?

10. 36 eggs are how many dozen eggs?

11. 30 eggs are how many dozen eggs?

12. How much will 42 eggs cost at 10¢ a dozen?

13. How much will 54 eggs cost at 16¢ a dozen?

14. A boy sold 140 papers and gained $\frac{1}{2}$ of a cent on each paper. How much did he gain?

15. One day he sold 18 papers and gained $\frac{2}{3}$ of a cent on each paper. How much did he gain?

16. A boy bought 40 papers for $.50 and sold them for 2¢ each. How much did he gain?

Problems from Geography

1. The distance from Chicago to Omaha is 493 miles. From Chicago to San Francisco it is 2357 miles. What is the distance from Omaha to San Francisco?

2. In 1900 the population of each of the New England states was as follows: Maine, 694,466; New Hampshire, 411,588; Vermont, 343,641; Massachusetts, 2,805,346; Rhode Island, 428,556; Connecticut, 908,355. What was the population of the whole of New England at that time?

3. How did the population of Massachusetts compare with that of all the other New England states together?

4. Find how many times as many people there were in Massachusetts as in Rhode Island.

5. The population of the United States in 1840 was 17,069,453. In 1900 it was 75,997,773. How many more people were there in the country in 1900 than in 1840?

6. How many times as many people were there in 1900 as in 1840?

7. The population of the United States in 1800 was 5,308,483. How many times as many people were there in 1900 as in 1800?

8. In 1890 the population was 62,979,766. How much did the population increase from 1890 to 1900?

9. What was the average amount of increase for each year?

10. In 1898 the population of England was 29,878,043. Its area is 50,841 square miles. How many people were there for each square mile?

11. The area of the state of Massachusetts is 8315 square miles. In 1890 its population was 2,238,943. How many people were there for each square mile?

Problems

1. A merchant gained $4963.20 in a year. What was the average gain for each month?

2. What was the average gain for each week?

3. A grain dealer bought 460 bushels of wheat at 78¢ a bushel. He sold it for $450. How much did he gain?

4. He bought 525 bushels of corn for $210 and sold it for 48¢ a bushel. How much was his profit?

5. A man bought 10 barrels of flour at $4.30 a barrel and paid for it with potatoes at 43¢ a bushel. How many bushels did it take?

6. How many dozen eggs at 14¢ a dozen will be enough to pay for 20 pounds of butter at 28¢ a pound?

7. If I buy a peck of beans for $.40, at what price must I sell them per quart to gain $.24?

8. If I buy a cheese weighing 30 pounds at 9¢ a pound, how much must I receive for the whole cheese in order to gain $.75?

9. At the rate of 12 miles in 3 hours, how far would a man walk in 7 hours?

10. How many hours would it take him to walk 48 miles?

11. What is the value of 300 bales of cotton at 13¢ a pound, if each bale weighs 430 pounds?

12. If the cotton crop of the United States amounts to 8,500,000 bales for a year, and the average weight of the bales is 500 pounds, what is the total value of the crop at 16¢ per pound?

13. If unfavorable weather should reduce the crop to 7,800,000 bales of 420 pounds each and the price should be 18¢ per pound, what would be the value of the crop?

Problems

1. The rate of letter postage to any part of the United States is "two cents per ounce or fraction thereof." What would be the postage on a letter weighing 3 ounces?

2. What would be the postage on a letter weighing $2\frac{1}{4}$ ounces?

3. The rate on printed books and pamphlets is "one cent for each two ounces or fraction thereof." What is the postage on a book weighing $7\frac{3}{4}$ ounces?

4. What would be the postage on 12 pamphlets, each of which weighs half an ounce?

5. How much will it cost me to send in the mail 2 letters weighing $\frac{2}{3}$ of an ounce each, 1 letter weighing $1\frac{1}{4}$ ounces, and a book weighing $6\frac{1}{2}$ ounces?

6. How many years are there from 1763 to 1899?

7. How many years and months are there from March 1, 1842, to May 1, 1873?

8. George Washington was born in February, 1732, and died in December, 1799. How many years and months did he live?

9. Benjamin Franklin was born in January, 1706, and died in April, 1790. At what age did he die?

10. How many months and days are there from February 12 to April 15?

11. Abraham Lincoln was born February 12, 1809, and died April 15, 1865. How many years, months, and days did he live?

12. Find the number of years, months, and days from June 5, 1892, to September 18, 1900.

13. Find the number of years, months, and days from August 1, 1883, to December 27, 1889.

Original Problems

Make problems and solve them :

1. Two men start at the same place and walk in opposite directions.

2. Two trains of cars leave Chicago at 8 A.M. One moves east and the other moves west.

3. 2 men can do a piece of work in 5 days.

4. 3 girls can pick 6 quarts of berries in an hour.

5. A grocer hired a man and a boy to do some work. He paid the man three times as much as the boy and paid them both $12.

6. A train runs 30 miles an hour and runs 600 miles.

7. A train runs 500 miles in 20 hours.

8. A boy can walk 7 miles in 2 hours.

9. A box is 12 inches long and 5 inches wide.

10. Another box is 8 inches long, 8 inches wide, and 8 inches high.

11. A window has 8 panes of glass. Each pane is 12 inches long and 9 inches wide.

12. The sum of two numbers is 365.

13. The difference between two numbers is 120.

14. A man divided an estate of $4800 among his wife and two children.

15. A lady bought 2 quires of paper.

16. She bought envelopes and stamps to use with the paper.

17. A farmer sold 28 eggs at 24¢ a dozen.

18. A lady bought 18 eggs.

19. A boy sold 60 papers.

Multiplication Table

$2 \times 2 = 4$	$2 \times 3 = 6$	$2 \times 4 = 8$	$2 \times 5 = 10$
$3 \times 2 = 6$	$3 \times 3 = 9$	$3 \times 4 = 12$	$3 \times 5 = 15$
$4 \times 2 = 8$	$4 \times 3 = 12$	$4 \times 4 = 16$	$4 \times 5 = 20$
$5 \times 2 = 10$	$5 \times 3 = 15$	$5 \times 4 = 20$	$5 \times 5 = 25$
$6 \times 2 = 12$	$6 \times 3 = 18$	$6 \times 4 = 24$	$6 \times 5 = 30$
$7 \times 2 = 14$	$7 \times 3 = 21$	$7 \times 4 = 28$	$7 \times 5 = 35$
$8 \times 2 = 16$	$8 \times 3 = 24$	$8 \times 4 = 32$	$8 \times 5 = 40$
$9 \times 2 = 18$	$9 \times 3 = 27$	$9 \times 4 = 36$	$9 \times 5 = 45$
$10 \times 2 = 20$	$10 \times 3 = 30$	$10 \times 4 = 40$	$10 \times 5 = 50$
$11 \times 2 = 22$	$11 \times 3 = 33$	$11 \times 4 = 44$	$11 \times 5 = 55$
$12 \times 2 = 24$	$12 \times 3 = 36$	$12 \times 4 = 48$	$12 \times 5 = 60$

$2 \times 6 = 12$	$2 \times 7 = 14$	$2 \times 8 = 16$	$2 \times 9 = 18$
$3 \times 6 = 18$	$3 \times 7 = 21$	$3 \times 8 = 24$	$3 \times 9 = 27$
$4 \times 6 = 24$	$4 \times 7 = 28$	$4 \times 8 = 32$	$4 \times 9 = 36$
$5 \times 6 = 30$	$5 \times 7 = 35$	$5 \times 8 = 40$	$5 \times 9 = 45$
$6 \times 6 = 36$	$6 \times 7 = 42$	$6 \times 8 = 48$	$6 \times 9 = 54$
$7 \times 6 = 42$	$7 \times 7 = 49$	$7 \times 8 = 56$	$7 \times 9 = 63$
$8 \times 6 = 48$	$8 \times 7 = 56$	$8 \times 8 = 64$	$8 \times 9 = 72$
$9 \times 6 = 54$	$9 \times 7 = 63$	$9 \times 8 = 72$	$9 \times 9 = 81$
$10 \times 6 = 60$	$10 \times 7 = 70$	$10 \times 8 = 80$	$10 \times 9 = 90$
$11 \times 6 = 66$	$11 \times 7 = 77$	$11 \times 8 = 88$	$11 \times 9 = 99$
$12 \times 6 = 72$	$12 \times 7 = 84$	$12 \times 8 = 96$	$12 \times 9 = 108$

$2 \times 10 = 20$	$2 \times 11 = 22$	$2 \times 12 = 24$	$2 \times 13 = 26$
$3 \times 10 = 30$	$3 \times 11 = 33$	$3 \times 12 = 36$	$3 \times 13 = 39$
$4 \times 10 = 40$	$4 \times 11 = 44$	$4 \times 12 = 48$	$4 \times 13 = 52$
$5 \times 10 = 50$	$5 \times 11 = 55$	$5 \times 12 = 60$	$5 \times 13 = 65$
$6 \times 10 = 60$	$6 \times 11 = 66$	$6 \times 12 = 72$	$6 \times 13 = 78$
$7 \times 10 = 70$	$7 \times 11 = 77$	$7 \times 12 = 84$	$7 \times 13 = 91$
$8 \times 10 = 80$	$8 \times 11 = 88$	$8 \times 12 = 96$	$8 \times 13 = 104$
$9 \times 10 = 90$	$9 \times 11 = 99$	$9 \times 12 = 108$	$9 \times 13 = 117$
$10 \times 10 = 100$	$10 \times 11 = 110$	$10 \times 12 = 120$	$10 \times 13 = 130$
$11 \times 10 = 110$	$11 \times 11 = 121$	$11 \times 12 = 132$	$11 \times 13 = 143$
$12 \times 10 = 120$	$12 \times 11 = 132$	$12 \times 12 = 144$	$12 \times 13 = 156$

Measures

Liquid Measure

2	pints	= 1 quart
4	quarts	= 1 gallon

Dry Measure

2	pints	= 1 quart
8	quarts	= 1 peck
4	pecks	= 1 bushel

Measures of Length

12	inches	= 1 foot
3	feet	= 1 yard
$16\frac{1}{2}$	feet	= 1 rod

Avoirdupois Weight

16	ounces	= 1 pound
2000	pounds	= 1 ton

Measures of Time

60	seconds	= 1 minute
60	minutes	= 1 hour
24	hours	= 1 day
7	days	= 1 week
52	weeks 1 day	= 1 year
12	months	= 1 year

Miscellaneous Table

12	units	= 1 dozen
24	sheets	= 1 quire

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